AD-A158 186 OCULAR CHANGES DURING PREGNANCY AND THEIR EFFECTS ON REFRACTION(U) AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH T D MANGES 24 JUN 85 AFIT/CI/NR-85-98T 1/1

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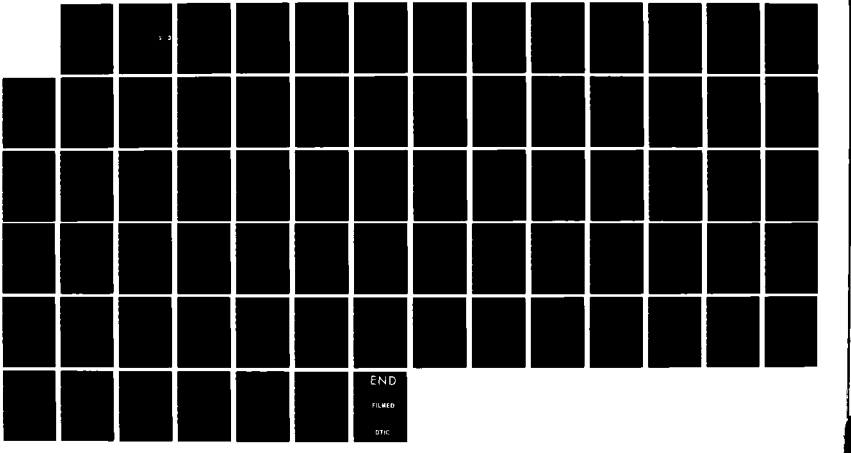

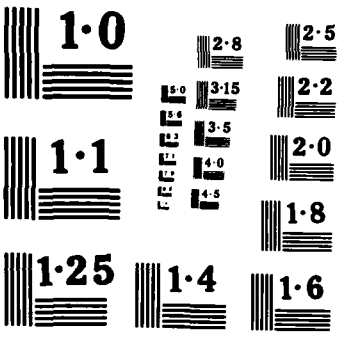

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REPORT DOCUMENTATION PAGE

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1. REPORT NUMBER: AFIT/CI/NR 85-98T	2. GOVT ACCESSION NO. / 3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle): Ocular Changes During Pregnancy and their Effects on Refraction	5. TYPE OF REPORT & PERIOD COVERED: THESIS/DISSERTATION
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s): Thomas D. Manges	8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS: AFIT STUDENT AT: Pacific University College of Optometry	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS: AFIT/NR WPAFB OH 45433 - 6583	12. REPORT DATE: June 1985
	13. NUMBER OF PAGES: 65
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)	15. SECURITY CLASS. (of this report): UNCLASS
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

DTIC ELECTE AUG 21 1985 S D

B

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

APPROVED FOR PUBLIC RELEASE: IAW AFR 190-1

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Ocular Changes During Pregnancy and their Effects on Refraction

by

Major Thomas D. Manges, O.D.,BSC,USAF

Thesis submitted in partial fulfillment of requirements for
the double major degree
M.S. Clinical Optometry (Management Track)
and Physiological Optics

65 pages

PACIFIC UNIVERSITY COLLEGE OF OPTOMETRY

24 June 1985

* The views presented in this paper are my own, and do not necessarily represent the views of the Department of the Air Force or the Department of Defense.

ABSTRACT

The differences between the findings obtained during two complete optometric exams conducted 3 months apart with 38 non-pregnant, and 93 pregnant subjects (divided equally into three groups based on the trimester of pregnancy in which their exams were done) were compared by single factor analysis of variance, F-ratios, and t-tests. Refractive error, corneal curvature and thickness, accommodative amplitude, ACA ratio and fusion break ranges were not found to be significantly different. The refractive changes experienced by the pregnant subjects in the various trimesters during the 3 months between exams were no different than the changes experienced by the non-pregnant subjects during the same time period, and even though a variety of physiological change occur during pregnancy, changes in refractive status are not significant, and do not preclude changing spectacle prescriptions during pregnancy.

KEY WORDS: refractive error; pregnancy; corneal thickness; corneal curvature; ductions; vergences; accommodation; IOP; AC/A ratio;

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Optometric Findings During Pregnancy

by

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accepted and aproved by the thesis committee 24 June 1985

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ACKNOWLEDGMENTS

I would like to give a special vote of thanks to my wife, Janice, and my children for their help, support, and understanding during the course of study, and particularly during the thesis process.

A special thanks is also due to the members of the faculty and staff of Pacific University who proffered their invaluable assistance in completing this document.

Considerable assistance was also provided by the staff of the Multnomah County Health Center, for which I heartily thank them.

Last, but not least, thank you to the Department of the Air Force for providing this opportunity for advanced education.

INTRODUCTION

There is a general belief in the vision care field that pregnancy is accompanied by physiological changes that cause temporary alterations in the refractive error so that it is unwise to change the spectacle prescription during pregnancy. It is, therefore, common to discourage pregnant patients from making appointments for refraction, and/or to delay changing a prescription until after the delivery. This is particularly true in military and HMO clinics, but also occurs in private practice.

The literature is sparse and contradictory on the topic of changes in refractive status during pregnancy, but some information can be extracted from studies concerned with other aspects of pregnancy and menstrual cycle effects, or from studies dealing with ocular changes produced by the use of oral contraceptives which mimic many of the effects of pregnancy.[1,2]

REFRACTIVE STATUS

Two studies reported a refractive shift toward myopia during pregnancy, but did not specify the amount of such changes.[3,4] Another study followed 51 women, sampling the refractive status by static retinoscopy 5 times during the course of pregnancy. The study concluded that after allowing for measurement error, the refrative variations were not significant.[5]

Another study of 7 women reported a tendency for refractive error to change towards myopia (less than 0.25 D

by static retinoscopy) during the menstrual cycle,[6] and three studies of 72 women using oral contraceptives reported that refractive changes toward increased myopia ocurred, but did not specify any amounts.[7,8,9] Thus, there is no consistent set of findings relating hormone level changes to refractive error.

CORNEAL CHANGES

Two studies of pregnant women reported increases in corneal thickness (attributed to edema), but the amounts of increase were not specified.[3,4] In a study by Manchester of 27 pregnant women, corneal thickness was measured during the third trimester and again post-partum. He found only a 0.001 mm mean decrease in corneal thickness.[10] Manchester also measured corneal curvature in the ninth month of pregnancy and 6 weeks post partum, finding a mean difference of only 0.01 D.[10]

Manchester and others have also reported that corneal thickness and corneal curvatures did not change significantly during the menstrual cycle, but they cautioned that there was not universal agreement on this point.[10,11]

In two separate studies of 72 and 74 women taking oral contraceptives, the first reported general corneal flattening without specifying amounts,[6] while the second reported a range of +0.50 to -0.50 corneal curvature changes, with the mean change being toward steepening, but, again, the amount was not specified.[7] Anderson and Martin

reported that of 74 women taking oral contraceptives for 6 months, 29 corneas steepened and 4 flattened, while after 12 months, 18 were still steeper, but none were flatter.[12] Manchester also reported on 26 women using oral contraceptives for one month. He found mean corneal curvature changes to be 0.02 D (steeper) with a range of less than 0.06 D. These changes were not considered significant.[10] Another study merely mentioned that there were no significant changes in corneal curvature or thickness due to oral contraceptives.[7] Soni conducted two studies of the effects of oral contraceptives on the cornea. The first reported that corneal curvature changes in 15 subjects over a three month period were not significant, ranging from 0.12 D of flattening to 0.37 D of steepening, but the variability in the findings suggested no clear trends.[13] The second study, of 23 women, showed that corneal thickness changes were again variable over time with no clear trends and a 0.04 mm range which was not considered significant.[14]

Despite the variety of changes that could occur, Koetting[15] reported general problems related to edema caused by sodium retention, and pointed out that there were no significant indications that oral contraceptives caused contact lens problems. Two other studies agreed, reporting no significant effects by oral contraceptives on patients wearing contacts.[16,17]

ACCOMMODATION AND CONVERGENCE

Only two studies could be found that dealt with the effects of pregnancy on accommodation and convergence. One reported that the changes in the amplitude of accommodation and in the AC/A ratio were not significant.[4] Another study reported reduced near point of convergence, accommodative amplitude, and duction ranges, sometimes resulting in diplopia.[8] No studies were found that related accommodative-convergence changes to the menstrual cycle.

OTHER FACTORS

Keily et al.[18] reported diurnal variations of corneal topography and thickness, which they judged to be not clinically significant, and although Manchester[10] reported no significant difference between corneal curvature measurements taken in the morning versus the afternoon, he reported a significant decrease in corneal thickness between awakening and retiring.

In addition, Lambert[19] reported that progestins and estrogens increased the permeability of the crystalline lens to water which could affect refractive error by steepening lenticular curves, reducing lenticular index of refraction, and/or reducing the anterior chamber depth.[13,14] Soni and Peter and Parsons[6] reported increased mucous production and dry eye problems from these hormones.

Another important point was raised by Westerhout[20] who reported that, based on 3 or 4 cases of contact lens problems that occurred during the course of abnormal

and the THIRD group. The CONTROL group has a considerable grouping of scores in the low negative region, and has no changes greater than 1.00 D. However, the THIRD group has a more uniform distribution of scores with several scores greater than 1.00 D. These results seem to support Lambert's findings that progestins and estrogens alter the permeability of the crystalline lens.[19]

The mean changes of the CONTROL group's near and distance break ranges (sum of absolute values of base-out (BO) and base-in (BI) findings) were greater than the changes for the other groups in all but one case, the distance break range of the THIRD group (Table 9). For the distance tests, there were, respectively, 7,2,5, and 6 individual subjects changing more than 4 prism diopters (pd). Of the pregnant subjects, 39 had increased ranges, 37 had decreased ranges, and 17 did not change. Of the CONTROLS, 15 increased, 19 decreased, and 4 did not change. None of the differences between groups were significant (analysis of variance, $F = 0.82$, $df = 3/127$, $p > .05$). The F-ratio between the SECOND group and the CONTROL group indicates that there is no significant difference in the variance ($F = 1.18$, $df = 29/37$, $p > .05$).

The near break means (Table 9) were also not statistically different between the groups (analysis of variance, $F = 0.44$, $df = 3/127$, $p > .05$). The F-ratio between the THIRD group and the CONTROL group indicates that there is no significant difference ($F = 1.05$, $df = 31/37$,

statistically different between the groups (analysis of variance, $F = 1.09$, $df = 3/127$, $p > .05$), and most of the individual changes would only be clinically significant in cases where a subject already had difficulties with accommodation, convergence, or their interactions. There were 7,5,1, and 3 subjects with absolute gradient AC/A ratio changes greater than 1 in the CONTROL, FIRST, SECOND, and THIRD respectively. Of the pregnant subjects, 26 had increased ratios, 20 had decreased ratios, and 46 had no change. In the CONTROL group, 11 increased, 11 decreased, and 16 did not change. The CONTROL group had more subjects with larger changes, as compared to the pregnant groups, but the incidence of large changes was very low.

The mean changes in the positive and negative relative accommodation ranges (Table 9) were small and not statistically different between the groups (analysis of variance, $F = 0.55$, $df = 3/127$, $p > .05$. Of the pregnant subjects, 31 had increased range, 38 had decreased range, and 25 had no change. Of the CONTROLS, 11 increased, 24 decreased, and 3 did not change.

The F-ratio between the SECOND group and the CONTROL group indicates that there is no significant difference in the variance ($F = 1.06$, $df = 29/37$, $p > .05$), however, the F-ratio between the THIRD group and the CONTROL group indicates a significant difference in the variance ($F = 3.40$ $df = 31/37$, $p < .01$). The frequency distribution in Table 10 shows the differences between the CONTROL group

10.22 % for the pregnant subjects. Of the pregnant subjects, steeper curves were found in 82 eyes, flatter curves in 64 eyes, and 40 eyes did not change. In the CONTROLS, 38 eyes were steeper, 24 were flatter, and 40 did not change.

Table 8 shows that mean corneal cylinder axis changes were similar in all groups (analysis of variance, $F = 0.70$, $df = 3/258$, $p > .05$). There were only 5 eyes with corneal cylinder axis changes greater than 10 degrees, 1,1,1, and 2 respectively in the CONTROL, FIRST, SECOND, and THIRD groups for an incidence of 4 in 186 pregnant subject's eyes, or 2.15 %. The F-ratio between the THIRD group and the CONTROL group indicates that there is no significant difference in the variance ($F = 1.16$, $df = 31/37$, $p > .05$).

With regard to corneal thickness, as Table 8 shows, the changes were relatively small, and the differences between the means of the groups were not statistically significant (analysis of variance, $F = 1.08$, $df = 3/258$, $p > .05$). The F-ratio between the THIRD group and the CONTROL group indicates that there is no significant difference in then variance ($F = 1.10$, $df = 31/37$, $p > .05$). Of the pregnant subjects, 139 eyes showed reduced thickness and 47 showed increased thickness, the mean amount being only about a 2% change. Forty-four increased and 32 In the CONTROL group, which had a larger mean change than all other groups, 44 corneas increased and 32 decreased.

ACCOMMODATION AND CONVERGENCE CHANGES

The mean gradient AC/A ratios (Table 9) were not

indicates no significant differences between these means ($F = 0.31$, $df = 3/258$, $p > .05$). The F-ratio between the SECOND group and the CONTROL group indicates that there is no significant difference in the variance ($F = 1.06$, $df = 29/37$, $p > .05$).

TABLE 8. CORNEAL CHANGES

AVERAGE CORNEAL CURVATURE CHANGE (D)

GROUP	N	MEAN	SD	RANGE
CONTROL	76	0.061	0.252	-0.875 to +0.875
FIRST	62	0.087	0.189	-0.50 to +0.625
SECOND	60	0.030	0.259	-0.688 to +0.875
THIRD	64	0.025	0.211	-0.375 to +0.625

K AXIS (degrees)

GROUP	N	MEAN	SD	RANGE
CONTROL	76	3.316	3.634	0 to 20
FIRST	62	3.806	3.172	0 to 20
SECOND	60	3.083	2.676	0 to 15
THIRD	64	3.031	3.908	0 to 23

CORNEAL THICKNESS CHANGES (MM)

GROUP	N	MEAN	SD	RANGE
CONTROL	76	-0.015	0.040	-0.135 to +0.068
FIRST	62	-0.006	0.025	-0.050 to +0.070
SECOND	60	-0.014	0.030	-0.088 to +0.062
THIRD	64	-0.008	0.042	-0.081 to +0.097

Individually, nine eyes in the CONTROL group, 7 eyes in the FIRST group, 7 eyes in the SECOND group, and 5 eyes in the THIRD group had corneal curvature changes greater than 0.50 D. If these changes are considered clinically significant, the frequency of significant change was greater in the CONTROL group than in the other groups. The overall incidence of changes exceeding 0.50 D was 19 in 186 eyes, or

group had a sphere change of -0.50 D and another eye had a sphere change of +0.50 D, one eye in the SECOND group had a sphere change of +0.50 D, one eye in the THIRD group had a cylinder change of -0.75 D, and one eye in the THIRD group had a cylinder change of +0.75 D (the latter two cylinder changes were from the same subject, who claimed to be no longer wearing her contact lenses), and the remaining individual changes were all +/- 0.25 D or less. If changes greater than 0.25 D are considered clinically significant, then the incidence of such change is 5 of 372 or 1.34 % in the pregnant subjects. There were no changes greater than 0.25 D in the CONTROL group.

Mean cylinder axis changes were very similar in all groups, as shown in Table 7. Individual axis changes greater than 10 degrees were: 3 in the CONTROL group, 4 in the FIRST group, 1 in the SECOND group, and 3 in the THIRD group. There were 8 axis changes greater than 10 degrees among the pregnant subjects, for an incidence of 8 in 186, or 4.3 %. None of these mean changes were statistically significant (analysis of variance, $F = 0.79$, $df = 3/258$, $p > .05$). The F-ratio between the FIRST group and the CONTROL group indicates that there is no significant difference in variances ($F = 1.20$, $df = 30/37$, $p > .05$).

CORNEAL CHANGES

The mean changes in corneal curvature, based on the average of three measurements per eye, are shown in Table 8. Positive values indicate steepening. Analysis of variance

minus change scores represented in the data. To address this concern, F-ratios were used to compare variances when the standard deviation of any experimental group was larger than the corresponding control group value.

REFRACTIVE CHANGES

Mean changes in the spherical equivalent refractive error and cylinder axis are shown in Table 7. For the pregnant subjects, changes toward more myopia were found in 28 eyes, changes toward less myopia in 29 eyes, and the remaining 129 eyes did not change. Of the CONTROLS, 19 eyes had changes toward myopia, 16 eyes had changes toward less myopia, and 40 eyes did not change. None of the mean changes are statistically significant (analysis of variance, $F = 1.23$, $df = 3/258$, $p > .05$), and none of the subjects complained about any changes they might have experienced.

TABLE 7. REFRACTIVE CHANGES

SPHERICAL EQUIVALENT (D)

GROUP	N	MEAN	SD	RANGE
CONTROL	76	-0.016	0.178	-0.50 to +0.375
FIRST	62	-0.008	0.139	-0.375 to +0.50
SECOND	60	-0.017	0.145	-0.50 to +0.25
THIRD	64	0.027	0.149	-0.375 to +0.375

CYLINDER AXIS (degrees)

GROUP	N	MEAN	SD	RANGE
CONTROL	76	1.342	4.203	0 to 30
FIRST	62	1.758	4.601	0 to 23
SECOND	60	0.833	2.519	0 to 15
THIRD	64	1.703	3.710	0 to 15

On an individual subject basis, one eye in the FIRST

Distance and near end-point test targets were 20/20 Snellen or reduced Snellen letters calibrated for viewing distance by angular subtense at the front of the refractor.

This standardization was important because distinct increases in visual acuity occur with increases in chart luminance.[25] It was also important in the accommodation tests so that changes in pupil size caused by charts with higher luminance would not change pupil size and depth of focus.[26,27] Pupil sizes were measured with an illuminance of 130 Lux (approximately 12 ft-cd) at the beginning of each exam in order to detect changes. Only 2 or 3 subjects in each group showed an increase or a decrease in pupil size between the first and second exams. The amount of each change did not exceed 1.0 mm for any subject.

RESULTS

Data obtained during the first and second examinations were compared and individual subject change scores were calculated for each of the tests described above. These change scores were then combined across subjects in each of the groups and means were calculated. These group means were compared by analysis of variance and t-tests when required. Although these tests are appropriate for detecting differences between means, they do not test for differences between group variances. This is of concern because change scores can vary in plus or minus direction so that two groups could have identical means but different variances. This could occur if there are opposing plus and

TABLE 6. EXAM DATE VARIATIONS (DAYS)

GROUP	N	MEAN	SD	RANGE
ALL SUBJECTS	131	2.12	5.35	-11 to +13
CONTROL	38	2.26	6.18	- 8 to +12
FIRST	31	1.10	5.03	- 8 to +12
SECOND	30	2.33	5.68	-11 to +13
THIRD	32	2.78	4.76	- 4 to +13

A complete optometric exam, including measurement of corneal thickness, was conducted on each of the subjects' two visits. Instruments used included B&L Keratometers, and either a B&L Greens refractor, an AO Phoropter, or a Topcon Phoropter (access to the desired number of subjects required exams to be conducted at three different sites), and a Diagnostic Concepts Electronic Digital Pachometer, Model 6090, attached to a Mentor S-10 slit-lamp. At the beginning of the study, the examiner became proficient with the pachometer by working with targets of known thickness and with practice subjects. Prior to each day's work, the examiner calibrated, checked, and/or standardized all equipment, test distances, and lighting. Care was taken to re-examine subjects with the same equipment that was used for the first exam.

The illumination levels in the exam rooms were monitored with a Spectra Candela LD-300 light meter (Photo Research Corporation), and calibrated against a Tektronics J-16 photometer/radiometer with illuminance probe. The standards were 864 Lux (80 ft-cd) for near tests and 172.8 Lux (16 ft-cd) for the distance targets produced by an AO Project-O-Chart projector on a screen in a darkened room.

within 1.0 SD of the desired average.

METHODS

After fully explaining the procedures of the study, informed consent was obtained from 185 caucasian women of child bearing age, 131 of whom completed the study. The subjects were arranged in four groups as described above, and an experienced optometrist conducted two complete examinations on each subject -- the first upon entry into the study, and the second 90 days later. An attempt was made to avoid data contamination resulting from diurnal and/or cyclic variations by having all subjects return at the same time of day as the first exam, and by having the CONTROL subjects return on the same day of the menstrual cycle 3 cycles later. (see Table 5)

TABLE 5. GROUPING AND EXAMINATION SCHEDULE

GROUP	ENTRY CONDITION	1ST EXAM	2ND EXAM	END CONDITION
CONTROL	NOT PREGNANT	ON ENTRY	3 CYCLES	NOT PREGNANT
FIRST	1ST TRI	ON ENTRY	90 DAYS	2ND TRI
SECOND	2ND TRI	ON ENTRY	90 DAYS	3RD TRI
THIRD	3RD TRI	ON ENTRY	90 DAYS	POST PARTUM

Few subjects were able to return exactly as planned, but most at least matched morning or afternoon exam times. The mean number of off-schedule exam times (days) is shown in Table 6. The differences between these means were not significant by analysis of variance ($F = 0.63$, $df = 3/127$, $p > .05$).

lens wear during the course of a previous pregnancy (none of them attempted to resume wear at a later time), but no subject reported visual changes during this study.

Only a few subjects reported systemic edema, and none had more than 1mm of pitting edema (about 4.5 Kg).[22] There were, respectively, 1,1,6, and 7 subjects in the CONTROL, FIRST, SECOND, and THIRD groups with up to 1mm of pitting edema.

The study was conducted from the end of August to the beginning of April in a mild climate. More systemic edema might have been expected if the weather had been hot, as many subjects reported having larger amounts of water retention during previous pregnancies which included summer months.

TABLE 4. WEIGHT CHANGE (KGS)

GROUP	N	MEAN	SD	RANGE
ALL SUBJECTS	131	0.14	6.02	-19.55 to +17.73
CONTROL	38	-0.28	1.26	- 4.55 to + 2.27
FIRST	31	3.78	2.00	0 to + 8.64
SECOND	30	5.21	3.54	0 to +17.73
THIRD	32	-7.64	5.81	-19.55 to + 7.73

The mean weight changes in kilograms (Kg) are shown in table 4. The desired weight gain during pregnancy is 1.7 % during the 1st 13 weeks, and an additional 18.3 % over the next 27 weeks, resulting in an average gain of .349 Kg per week (SD .235, range -.140 to .973), or an average of 4.537 Kg (SD 3.06) in 13 weeks.[26] These values are not greatly different from the changes found in this study, which are

TABLE 2. NUMBER OF PREGNANCIES

GROUP	N	MEAN	SD	RANGE
ALL SUBJECTS	131	2.99	1.91	0 to 9
CONTROL	38	3.77	2.17	0 to 9
FIRST	31	2.39	1.23	1 to 5
SECOND	30	2.57	1.61	1 to 7
THIRD	32	3.03	2.13	1 to 9

One subject in the FIRST group ran 5 miles per day, and 14 subjects in the THIRD group were nursing their new-borns by the time of the second exam. (This may be important because serum hormone levels of estriol, estradiol, and progesterone increase by a factor of 20 during pregnancy,[3] and remain high during nursing,[21] but otherwise return to the pre-pregnancy levels.)

TABLE 3. SUBSTANCE USE

GROUP	CONTROL	FIRST	SECOND	THIRD
ALCOHOL	3	2	3	2
TOBACCO	2	5	8	3

All but 3 subjects (not more than 1 per group) claimed to eat balanced diets including all food groups. All pregnant subjects were taking pre-natal vitamins, and a few were also taking calcium and/or iron, as well. Twelve control subjects were also taking vitamins. As Table 3 shows, 10 subjects consumed small to moderate amounts of alcohol during the study, and 18 smoked.

The subjects were asked whether they had experienced visual changes during the study or during previous pregnancies. Five reported needing to discontinue contact

included who were wearing contact lenses, taking medication (except vitamins), suffering active disease (systemic or ocular), or who had best corrected VA less than 20/20. No one in the control group was taking oral contraceptives, nor had undergone a hysterectomy.

TABLE 1. SUBJECT AGE

GROUP	N	MEAN	SD	RANGE
ALL SUBJECTS	131	27.18	5.63	15 to 40
CONTROL	38	30.16	5.69	15 to 40
FIRST	31	25.97	5.05	17 to 38
SECOND	30	25.00	5.05	15 to 40
THIRD	32	26.81	4.62	17 to 35

Table 1 shows the mean ages for the subjects in the various groups. These means were significantly different according to an analysis of variance ($F = 6.84$, $df = 3/127$, $p < .05$, and t-tests indicated that the control group was significantly older than each of the other groups ($t(67) = 3.198$, $p < .05$); ($t(66) = 3.866$, $p < .05$); ($t(68) = 2.665$, $p < .05$) for the CONTROL group versus the FIRST, SECOND, and THIRD groups respectively.

Table 2 shows the mean number of prior pregnancies for the groups. These means were significantly different according to an analysis of variance ($F = 3.56$, $df = 3/127$, $p < .05$), and t-tests indicated that the CONTROL group had significantly more pregnancies than the FIRST and SECOND groups, ($t(67) = 3.136$, $p < .05$); ($t(66) = 2.516$, $p < .05$); ($t(68) = 1.415$, $p > .05$) for the CONTROL group versus the FIRST, SECOND, and THIRD groups respectively.

refractive or accommodative-convergence changes 1) are common during pregnancy, 2) occur in a pattern related to the course of pregnancy, 3) could cause a new prescription to be desirable for the patient and/or optometrist, 4) are related to central corneal curvature or thickness changes, 5) remain after the termination of pregnancy, and 6) are related to changes in weight and/or systemic edema.

The hypothesis was that even though a variety of physiological changes occur during pregnancy, changes in refractive status and related systems are generally not significant and thus do not automatically preclude changing spectacle prescriptions during a normal pregnancy.

SUBJECTS

One hundred thirty-one subjects served in this experiment. They were arranged in four groups named according to the subjects' conditions at the time of the initial examination: 38 non-pregnant women (CONTROL), 31 women in the first trimester (FIRST), 30 women in the 2nd trimester (SECOND), and 32 women in the 3rd trimester (THIRD). To the degree it was possible, the control group was matched to the other groups on the basis of age and number of pregnancies, but the matching was not perfect because of the number of subjects who did not return for second examinations. Of those lost to follow-up, about half declined to return for the required second visit, and about half were dropped because they could not return within 15 days of their scheduled return time. No subjects were

pregnancies, he would suspect an abnormal pregnancy if contact lens problems appeared during the pregnancy.

From the studies cited above, it is clear that there is considerable individual variation in response to pregnancy, and that hormonal changes can affect the eyes in a variety of ways. These effects may cause changes in refractive status, corneal curvature (steepening or flattening), corneal thickness, corneal metabolism, accommodative-convergence systems, IOP, and precorneal tear film, all of which can cause changes in visual acuity and result in a perceived need for a change in prescription.

Some caution is indicated in using data from the cited studies, however, because some did not have control groups and/or had very small samples, but the literature does seem to indicate that under normal circumstances corneal changes occurring in pregnancy would probably not contribute in a major way to changes in refractive error. But, since many of these changes relate to edema which may occur during pregnancy, it is possible that significant corneal changes could occur when edema is greater than normal, or when other gestational abnormalities are present.

Corneal changes related to pregnancy, oral contraceptives, and menstrual cycle, have been reviewed,[10] but there is little information on related refractive changes. Therefore, the current study was designed to measure changes in refractive status during pregnancy. The main purposes of the study were to determine whether

p > .05). There were 13,1,8, and 14 subjects with changes of 4 pd or more in the CONTROL, FIRST, SECOND, and THIRD groups respectively. Of the pregnant subjects, 34 had increased ranges, 42 had decreased ranges, and 17 did not change. Of the controls, 10 increased, 22 decreased, and 6 did not change. (Blur and recovery findings were very similar to the break findings.)

TABLE 9. ACCOMMODATION-CONVERGENCE CHANGES

GRADIENT AC/A RATIO

GROUP	N	MEAN	SD	RANGE
CONTROL	38	-0.158	1.151	-3 to +2
FIRST	31	+0.226	0.920	-2 to +2
SECOND	30	-0.233	1.006	-1 to +4
THIRD	32	-0.031	1.121	-2 to +4

ACCOMMODATION (D)

GROUP	N	MEAN	SD	RANGE
CONTROL	38	-0.132	0.548	-1.00 to +1.00
FIRST	31	-0.073	0.457	-1.00 to +1.00
SECOND	30	-0.058	0.564	-1.00 to +1.75
THIRD	32	-0.008	1.009	-1.50 to +2.75

DISTANCE BREAK RANGE (pd)

GROUP	N	MEAN	SD	RANGE
CONTROL	38	-0.868	4.598	-10 to +13
FIRST	31	-0.032	2.702	- 6 to + 8
SECOND	30	-0.667	4.999	-11 to +15
THIRD	32	-1.188	3.939	-12 to + 9

NEAR BREAK RANGE (pd)

GROUP	N	MEAN	SD	RANGE
CONTROL	38	-1.447	5.044	-14 to + 8
FIRST	31	-0.387	3.252	-10 to + 4
SECOND	30	-1.033	4.916	-10 to +16
THIRD	32	-0.312	5.164	-10 to +14

TABLE 10. FREQUENCY DISTRIBUTION FOR ACCOMMODATIVE FINDINGS

D	CONTROL	THIRD
-1.50	0	2
-1.25	0	1
-1.00	1	3
-0.75	5	2
-0.50	9	5
-0.25	9	1
0.00	4	6
+0.25	3	2
+0.50	1	2
+0.75	3	1
+1.00	3	1
+1.25	0	1
+1.50	0	2
+2.00	0	1

OTHER CHANGES

Offret[3] and Millodot[4] reported reduced intra-ocular pressure (IOP) during pregnancy. In the present study no significant change in IOP was found (analysis of variance, $F = 1.44$, $df = 3/127$, $p > .05$). Of the pregnant subjects, 73 had increased IOP, 54 had decreased IOP, and 59 did not change. (Table 11) Of the controls, 32 increased, 29 decreased, and 15 did not change. The F-ratio between the SECOND group and the CONTROL group indicates that there is no significant difference in variance ($F = 1.51$, $df = 29/37$, $p > .05$).

TABLE 11. IOP CHANGES

GROUP	N	MEAN	SD	RANGE
CONTROL	76	-0.092	1.406	-3 to +3
FIRST	62	0.081	1.219	-3 to +3
SECOND	60	0.083	1.730	-5 to +4
THIRD	64	0.156	1.144	-2 to +3

DISCUSSION

The aim of this project was to determine if pregnancy-induced changes in refraction and/or other optometric findings make it inappropriate to examine pregnant women or to change their prescriptions on the basis of data obtained during pregnancy. The answers to these questions seem quite clear. With respect to refractive error, the mean changes for the pregnant and non-pregnant groups were all less than 0.03 D and there were no differences between any of the groups. The vast majority (129 of 186 eyes in the pregnant groups and 40 of 76 eyes in the CONTROL group) showed no spherical equivalent refractive changes between the first and second exams. A similar result was found for cylinder axis measurements. Based on these data, there seems to be no reason to deny a pregnant woman an optometric examination or a prescription change.

Somewhat more surprising is the finding that pregnancy does not produce corneal curvature and/or thickness changes significantly greater than those found for the control subjects. Conventional wisdom suggests that problems can occur with contact lens fit if a patient begins to take oral contraceptives and/or becomes pregnant, but this is not supported by the data presented above. A lack of significant change during pregnancy was also found in the accommodation/convergence and IOP data.

Taken together, these data suggest that the presumed effects of pregnancy on the eye and visual system are

greatly over-rated. While there may be significant ocular changes that occur between the non-pregnant and pregnant states (a transition not assessed in this study), changes during pregnancy were not clinically significant in the vast majority of patients.

To illustrate this, assume a clinically significant change in spherical equivalent to be more than -0.25 or +0.50 D and a significant change in corneal curvature to be over 0.50 D. Then 7.89 % of the pregnant subjects and 2.69 % of the controls experienced such changes between the two exams. This difference is not statistically significant (chi square = 1.78, df = 1, $p > .05$), thus pregnant women change refractive error no more often than do non-pregnant women.

CONCLUSIONS

The above results indicate that ocular changes occuring during pregnancy are neither as extensive nor as common as previously believed. The refractive changes experienced by the pregnant subjects during the three months between exams were no different statistically than the changes experienced by the non-pregnant subjects during the same time period.

No cases were found in which a new prescription was desired by the subject, and in only four out of 186 eyes would an optometrist have considered a change to be warranted (sphere change greater than 0.25 D). Even though a variety of physiological changes occur in the eye during pregnancy, major changes in refractive status are not common and do not automatically preclude changing spectacle

prescription during a normal pregnancy.

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APPENDIX A

EXPLANATION OF DATA TABLES

* In cases where a small cylinder was found in one exam and not the other, that result was eliminated from the axis change data and entered into the difference row in the table as a 0.

In cases where there was no blur finding, the break result was assumed to be the blur finding and entered into the table in that column.

Power results in 1/8 D. increments are shown in the table as a truncated decimal (.12 for .125, etc.), but the full 3 decimal places were used in the statistical treatment.

The data are entered into the tables across two pages, with the monocular results listed in 6 rows and the binocular results listed in 3 rows. On the first page the subject number and age are listed in the first column, and the results are listed with the first examination of the right eye across the first row, the second examination of the right eye across the second row (or in the first row only for binocular results), the first examination of the left eye across the third row, the second examination of the left eye across the fourth row (or in the third row only for binocular results), the differences between the examinations of the right eye across the fifth row, and the differences between the examinations of the left eye across the sixth

row (or in the fifth row only for binocular results).

The second column lists R for right, L for left, and D for difference. The other column headings in order are SPH for sphere, CYL for cylinder, AX for axis, K HOR for the horizontal corneal curvature, K VERT for the vertical corneal curvature, C TH for corneal thickness, IOP for intra-ocular pressure, #8 for the distance phoria, and #13B for the near phoria.

On the second page only the first column contains only the subject number and a letter "D" signalling the difference between exams. The other column headings are GRAD ACA for gradient ACA, #11 for the distance base in duction break and recovery, #9 #10 for the distance base out duction blur, break, and recovery, #17A #17B for the near base in duction blur, break, and recovery, #16A #16B for the near base out duction blur, break, and recovery, NPA + -PRA for the summation of the absolute values for the nepative and positive relative accommodation range, WT LB, for weight in pounds, and GRAV PARA for number of pregnancies and term deliveries respectively.

APPENDIX B

CONTROL GROUP

PT # AGE		SPH	CYL	AX	K HOR	K VERT	K AX VERT	C TH	IOP	# 8	#13B
1	R	0.00	0.00	*30	43.50	44.50	75	.5349	12	0	-2
	R	-.25	-.25	30	43.50	44.50	70	.5132	13		
25	L	-.50	0.00	*90	43.62	44.12	75	.4851	12	0	-6
	L	-.25	-.25	90	43.50	44.37	70	.5063	11		
	D	-.25	-.25	0	0.00	0.00	5	-.0217	1	0	-4
	D	.25	-.25	0	-.12	.25	5	.0212	-1		
2	R	0.00	-.25	90	46.12	46.37	87	.4896	9	-1	-4
	R	0.00	-.25	90	45.87	46.62	87	.5050	11		
34	L	0.00	0.00	0	47.75	47.00	80	.4831	10	-1	0
	L	-.25	0.00	0	46.00	47.00	80	.5502	10		
	D	0.00	0.00	0	-.25	.25	0	.0154	2	0	4
	D	-.25	0.00	0	-1.75	0.00	0	.0671	0		
3	R	-1.50	-1.00	80	43.50	44.50	80	.4815	13	1	-4
	R	-1.25	-1.00	80	43.50	44.50	90	.5491	13		
27	L	-1.50	-.50	90	43.62	44.12	90	.5983	12	1	-2
	L	-1.50	-.75	90	43.50	44.37	90	.5879	14		
	D	.25	0.00	0	0.00	0.00	10	.0676	0	0	2
	D	0.00	-.25	0	-.12	.25	0	-.0104	2		
4	R	0.00	-1.75	100	46.75	45.75	115	.5084	13	-1	0
	R	0.00	-1.75	100	46.00	45.62	117	.5549	13		
27	L	0.00	-1.50	80	46.50	46.12	90	.4810	13	1	-2
	L	0.00	-1.50	80	46.50	46.00	90	.5244	13		
	D	0.00	0.00	0	-.75	-.12	2	.0465	0	0	-2
	D	0.00	0.00	0	0.00	-.12	0	.0434	0		
5	R	-.25	-.25	165	44.00	44.50	90	.4857	10	-2	-2
	R	-.50	-.25	165	44.00	44.50	85	.5318	9		
37	L	-.50	0.00	0	43.00	43.50	90	.5131	8	-2	-5
	L	-.50	0.00	0	43.75	44.50	85	.5340	9		
	D	-.25	0.00	0	0.00	0.00	5	.0461	-1	0	-3
	D	0.00	0.00	0	.75	1.00	5	.0209	1		
6	R	0.00	0.00	0	47.12	47.62	88	.5116	11	1	0
	R	-.50	0.00	0	47.12	48.12	85	.4822	12		
31	L	0.00	0.00	0	46.75	48.12	85	.5495	13	0	1
	L	0.00	0.00	0	47.00	48.75	80	.5309	14		
	D	-.50	0.00	0	0.00	.50	3	-.0294	1	-1	1
	D	0.00	0.00	0	.25	.62	5	-.0186	1		
7	R	.50	-.50	85	44.50	44.75	75	.6114	16	0	0
	R	.75	-.75	85	45.00	45.50	60	.5437	14		
30	L	.75	-.75	105	44.62	44.75	100	.5500	16	0	2
	L	1.00	-.50	105	45.00	45.25	90	.5259	15		
	D	.25	-.25	0	.50	.75	15	-.0677	-2	0	2
	D	.25	.25	0	.37	.50	10	-.0241	-1		
8	R	-2.50	-.75	125	45.12	45.75	130	.5101	15	-4	-6
	R	-2.75	-1.00	125	45.62	46.00	125	.5011	16		
33	L	-3.00	-.75	60	44.87	45.62	105	.4861	17	-5	-9
	L	-3.00	-.75	55	45.00	46.00	95	.4956	16		
	D	-.25	-.25	0	.50	.25	5	-.0090	1	-1	-3
	D	0.00	0.00	5	.12	.37	10	.0095	1		

CONTROL GROUP

PT	GRAD ACA	#11		#9	#10		#17A	#17B		#16A	#16B		NRA + -PRA	WT KG	GRAV PARA	
1	3	6/	4	10/	14/	12	20/	26/	14	10/	10/	6	7.00	110	2/	2
	0	7/	3	8/	10/	8	18/	22/	16	10/	18/	2	7.25	112	2/	2
D	-3	1/	-1	-2/	-4/	-4	-2/	-4/	2	0/	8/	-4	.25	2	0/	0
2	2	8/	6	12/	18/	12	16/	22/	16	12/	12/	8	5.00	115	6/	5
	0	7/	5	12/	12/	8	14/	14/	12	14/	14/	10	4.50	115	6/	5
D	-2	-1/	-1	0/	-6/	-4	-2/	-8/	-4	2/	2/	2	-.50	0	0/	0
3	2	8/	3	7/	30/	12	16/	20/	18	8/	12/	-4	7.50	120	4/	4
	3	8/	5	8/	28/	12	18/	26/	14	14/	14/	0	7.25	110	4/	4
D	1	0/	2	1/	-2/	0	2/	6/	-4	6/	2/	4	-.25	-10	0/	0
4	3	7/	4	6/	16/	8	10/	20/	18	30/	30/	18	5.50	134	4/	4
	0	8/	6	8/	18/	12	16/	18/	14	18/	18/	10	5.75	134	4/	4
D	-3	1/	2	2/	2/	4	6/	-2/	-4	-12/	-12/	-8	.25	0	0/	0
5	4	6/	4	10/	12/	6	20/	18/	16	18/	18/	14	4.00	160	5/	5
	5	7/	5	6/	14/	4	18/	18/	8	20/	20/	4	3.75	165	5/	5
D	1	1/	1	-4/	2/	-2	-2/	0/	-8	2/	2/	-10	-.25	5	0/	0
6	1	6/	4	3/	12/	10	6/	16/	4	12/	14/	2	5.00	185	8/	6
	2	7/	4	12/	12/	10	12/	12/	0	12/	12/	0	4.50	185	8/	6
D	1	1/	0	9/	0/	0	6/	-4/	-4	0/	-2/	-2	-.50	0	0/	0
7	3	8/	5	10/	10/	8	18/	8/	14	19/	19/	8	5.75	185	4/	3
	1	9/	4	12/	12/	6	18/	18/	12	18/	18/	8	5.25	185	4/	3
D	-4	1/	-1	2/	2/	-2	0/	0/	-2	-1/	-1/	0	-.50	0	0/	0
8	4	6/	4	6/	6/	5	14/	26/	24	6/	6/	-4	5.00	155	6/	5
	4	9/	7	4/	4/	0	12/	24/	20	10/	10/	0	4.75	155	6/	5
D	0	3/	3	-2/	-2/	-5	-2/	-2/	-4	4/	4/	4	-.25	0	0/	0

CONTROL GROUP

PT # AGE		SPH	CYL	AX	K HOR	K VERT	K AX VERT	C TH	IOP	# 8	#138
9	R	-2.00	-.75	117	40.75	41.00	118	.5271	15	0	0
	R	-2.00	-.75	110	41.00	41.00	118	.4824	16		
25	L	-2.25	-.50	45	40.75	41.12	95	.5073	16	0	0
	L	-2.25	-.50	40	40.87	41.25	115	.4810	17		
	D	0.00	0.00	7	.25	0.00	0	-.0447	1	0	0
	D	0.00	0.00	5	.12	.12	20	-.0263	1		
10	R	-1.50	-.50	180	42.25	43.00	90	.5496	14	1	-1
	R	-1.75	-.25	5	42.75	43.75	90	.4980	13		
26	L	-1.25	-.25	15	42.50	43.00	88	.5431	15	2	-3
	L	-1.50	-.50	5	42.50	43.87	88	.4876	13		
	D	-.25	.25	5	.50	.75	0	-.0516	-1	1	-2
	D	-.25	-.25	10	0.00	.87	0	-.0555	-2		
11	R	0.00	0.00	0	42.87	43.62	90	.5921	11	-2	0
	R	.25	0.00	0	42.62	43.62	90	.4573	11		
35	L	0.00	0.00	0	42.75	43.75	88	.6096	11	-1	1
	L	.25	0.00	0	42.75	43.50	86	.4895	12		
	D	.25	0.00	0	-.25	0.00	0	-.1348	0	1	1
	D	.25	0.00	0	0.00	-.25	2	-.1201	1		
12	R	-2.50	-.75	170	44.37	46.00	90	.4954	11	0	0
	R	-2.50	-.75	170	44.25	45.75	92	.5345	12		
31	L	-2.50	-.50	20	44.75	46.50	80	.4891	11	1	3
	L	-2.75	-.75	20	44.50	46.37	82	.5091	10		
	D	0.00	0.00	0	-.12	-.25	2	.0391	1	1	3
	D	-.25	-.25	0	-.25	-.12	2	.0200	-1		
13	R	-.75	-.50	155	43.00	44.37	69	.5104	17	0	-1
	R	-.75	-.75	155	42.87	44.37	70	.4287	15		
32	L	-.75	-.75	180	43.00	44.75	85	.5646	14	0	-2
	L	-.50	-.50	165	42.75	44.50	90	.4813	15		
	D	0.00	-.25	0	-.12	0.00	1	-.0817	-2	0	-1
	D	.25	.25	15	-.25	-.25	5	-.0833	1		
14	R	-.25	-.25	150	44.50	44.87	75	.5255	13	0	2
	R	-.25	-.25	120	44.25	45.00	77	.4836	12		
26	L	-.50	0.00	0	45.00	45.25	90	.5188	13	1	2
	L	-.50	0.00	0	45.12	45.12	90	.4963	11		
	D	0.00	0.00	30	-.25	.12	2	.0419	-1	1	0
	D	0.00	0.00	0	.12	-.12	0	.0225	-2		
15	R	1.25	-.50	90	42.50	42.50	80	.6122	15	-5	-10
	R	1.25	-.50	90	42.37	42.62	80	.6055	12		
40	L	1.00	-.50	75	42.50	43.00	75	.5880	15	-4	-9
	L	1.25	-.50	75	42.50	43.25	70	.6044	13		
	D	0.00	0.00	0	-.12	.12	0	-.0067	-3	1	1
	D	.25	0.00	0	0.00	.25	5	.0164	-2		
16	R	0.00	0.00	0	43.50	44.00	85	.6291	8	-1	-4
	R	0.00	0.00	0	43.37	44.00	85	.5748	8		
39	L	-.25	-.50	5	43.37	44.50	88	.5555	8	-1	-3
	L	-.25	-.50	5	43.50	44.62	87	.5958	6		
	D	0.00	0.00	0	-.12	0.00	0	-.0543	0	0	1
	D	0.00	0.00	0	-.12	.12	1	.0403	-2		

FIRST TRIMESTER

PT	GRAD ACA	#11		#9	#10		#17A	#17B		#16A	#16B		NRA + -PRA	WT LB	GRAV PARA
25	2	4/	2	4/	12/	4	8/	20/	8	14/	14/	2	4.75	148	1/0
	2	6/	4	8/	12/	8	8/	18/	8	12/	12/	4	5.25	156	1 0
D	0	2/	2	4/	0/	4	0/	-2/	0	-2/	2/	2	.50	8	0/0
26	4	8/	6	8/	18/	6	20/	20/	16	10/	20/	0	6.50	172	1/0
	4	7/	5	10/	16/	10	20/	20/	16	8/	22/	4	6.50	180	1/0
D	0	-1/	-1	2/	-2/	4	0/	0/	0	-2/	2/	4	0.00	8	0/0
27	1	8/	3	12/	12/	1	18/	24/	10	6/	6/	-4	7.75	149	4/2
	1	7/	4	12/	12/	4	16/	22/	12	10/	10/	0	7.25	154	4/2
D	0	-1/	1	0/	0/	3	-2/	-2/	2	4/	4/	4	-.50	5	0/0
28	2	9/	5	10/	12/	3	14/	26/	22	6/	6/	2	5.50	187	3/2
	2	9/	5	10/	12/	6	12/	24/	20	6/	10/	4	5.50	200	3/2
D	0	0/	0	0/	0/	3	-2/	-2/	-2	0/	4/	2	0.00	13	0/0
29	2	7/	4	14/	24/	12	20/	24/	12	10/	10/	-4	5.75	196	2/1
	2	8/	6	12/	26/	10	20/	22/	10	10/	10/	0	5.75	205	2/1
D	0	1/	2	-2/	2/	-2	0/	-2/	-2	0/	0/	4	0.00	9	0/0
30	3	6/	4	14/	18/	14	16/	24/	16	18/	18/	10	6.00	105	3/2
	1	6/	4	16/	20/	10	16/	22/	14	16/	16/	8	6.75	115	3/2
D	-2	0/	0	2/	2/	-4	0/	-2/	-2	-2/	-2/	-2	.75	10	0/0
31	4	9/	4	8/	10/	2	16/	16/	8	12/	12/	8	5.75	180	4/3
	4	9/	4	8/	12/	6	16/	16/	8	12/	12/	8	5.75	190	4/3
D	0	0/	0	0/	2/	4	0/	0/	0	0/	0/	0	0.00	10	0/0

FIRST TRIMESTER

PT # AGE		SPH	CYL	AX	K HOR	K VERT	K AX VERT	C TH	IOP	# 8	#13B
25	R	-.25	0.00	0	41.50	42.00	90	.5308	12	1	-1
	R	-.25	0.00	0	41.50	42.00	88	.5134	12		
24	L	0.00	0.00	0	41.37	42.00	90	.5096	9	1	-1
	L	0.00	0.00	0	41.00	42.00	88	.4993	11		
	D	0.00	0.00	0	0.00	0.00	2	-.0174	0	0	0
	D	0.00	0.00	0	-.37	0.00	2	-.0103	2		
26	R	0.00	0.00	0	46.12	47.50	90	.5017	13	2	-1
	R	0.00	0.00	0	46.00	47.25	88	.4832	13		
22	L	0.00	-.50	22	45.87	47.12	88	.5101	12	2	-1
	L	0.00	-.50	25	46.00	47.00	88	.4891	12		
	D	0.00	0.00	0	-.12	-.25	2	-.0185	0	0	0
	D	0.00	0.00	3	.12	-.12	0	-.0210	0		
27	R	-2.25	-.25	22	45.25	45.50	85	.5126	12	0	-7
	R	-2.50	-.50	25	45.12	45.37	88	.4875	13		
27	L	-2.50	-.50	120	45.87	45.25	92	.4925	13	-1	-6
	L	-2.50	-.50	120	46.00	45.37	88	.4813	12		
	D	-.25	-.25	3	-.12	-.12	3	-.0251	1	-1	1
	D	0.00	0.00	0	.12	.12	4	-.0112	-1		
28	R	-.75	-.75	92	47.00	46.50	90	.5067	11	-3	-5
	R	-1.00	-.75	90	47.00	46.62	88	.4839	10		
27	L	-1.00	-.50	88	46.75	46.50	90	.5214	8	-3	-5
	L	-1.25	-.50	90	46.62	46.37	88	.5011	9		
	D	-.25	0.00	2	0.00	.12	2	-.0228	-1	0	0
	D	-.25	0.00	2	-.12	-.12	2	-.0203	1		
29	R	0.00	0.00	0	41.00	42.12	91	.5398	15	-1	-5
	R	0.00	0.00	0	41.00	42.00	90	.5162	16		
28	L	.25	0.00	0	40.75	41.62	95	.4966	15	-1	-5
	L	.25	0.00	0	40.50	41.50	90	.4834	16		
	D	0.00	0.00	0	0.00	-.12	1	-.0236	1	0	0
	D	0.00	0.00	0	-.25	-.12	5	-.0232	1		
30	R	0.00	0.00	0	43.50	44.25	86	.5075	11	0	-1
	R	0.00	0.00	0	43.50	44.50	88	.4864	11		
31	L	.50	0.00	0	43.25	44.50	108	.5152	11	1	-1
	L	0.00	0.00	0	42.75	44.75	100	.4939	10		
	D	0.00	0.00	0	0.00	.25	2	-.0211	0	1	0
	D	.50	0.00	0	-.50	.25	8	-.0213	-1		
31	R	0.00	-.50	117	44.12	45.37	90	.5029	13	0	-2
	R	0.00	-.50	120	44.00	45.50	85	.5010	14		
38	L	0.00	-.25	15	44.12	45.50	70	.5186	12	0	-2
	L	0.00	-.25	15	44.25	45.75	75	.4987	13		
	D	0.00	0.00	3	-.12	.12	5	-.0190	1	0	0
	D	0.00	0.00	0	.12	.25	5	-.0199	1		

FIRST TRIMESTER

PT	GRAD ACA	#11		#9	#10		#17A	#17B		#16A	#16B		NRA + -PRA	WT LB	GRAV PARA
17	2	9/	3	12/	16/	0	16/	16/	6	10/	10/	0	5.00	135	2/1
	2	9/	3	12/	16/	0	16/	16/	6	10/	10/	0	5.50	140	2/1
D	0	0/	0	0/	0/	0	0/	0/	0	0/	0/	0	.50	5	0/0
18	4	4/	3	8/	10/	8	8/	14/	10	24/	24/	6	5.00	130	3/2
	4	6/	2	10/	16/	6	10/	14/	8	20/	20/	8	5.00	142	3/2
D	0	2/	-1	2/	6/	-2	2/	0/	-2	-4/	-4/	2	0.00	12	0/0
19	3	6/	4	20/	20/	16	12/	20/	12	16/	20/	12	6.50	138	5/4
	3	4/	2	24/	24/	12	10/	16/	8	20/	24/	12	6.50	147	5/4
D	0	-2/	-2	4/	4/	-4	-2/	-4/	-4	4/	4/	0	0.00	9	0/0
20	3	5/	3	20/	20/	6	16/	20/	16	12/	12/	4	6.00	198	1/0
	5	7/	4	10/	20/	8	8/	18/	12	16/	16/	4	6.00	217	1/0
D	2	2/	1	-10/	0/	2	-8/	-2/	-4	4/	4/	0	0.00	19	0/0
21	2	9/	6	14/	18/	10	14/	16/	8	16/	16/	8	6.25	175	2/1
	2	8/	4	12/	16/	12	12/	16/	10	14/	14/	10	6.25	184	2/1
D	0	-1/	-2	-2/	-2/	2	-2/	0/	2	-2/	-2/	2	0.00	9	0/0
22	4	8/	5	8/	16/	12	12/	14/	12	22/	26/	22	5.75	105	2/1
	5	9/	6	10/	10/	8	16/	18/	12	20/	20/	14	6.00	110	2/1
D	1	1/	1	2/	-6/	-4	4/	4/	0	-2/	-6/	-8	.25	5	0/0
23	2	7/	5	8/	14/	8	20/	22/	14	26/	26/	8	6.50	132	1/0
	3	8/	6	10/	12/	6	18/	20/	12	24/	24/	10	6.50	138	1/0
D	1	1/	1	2/	-2/	-2	-2/	-2/	-2	-2/	-2/	2	0.00	6	0/0
24	3	7/	4	10/	10/	2	12/	20/	16	8/	8/	-8	5.50	157	1/0
	3	6/	2	8/	8/	4	16/	16/	12	8/	8/	-8	5.50	166	1/0
D	0	-1/	-2	-2/	-2/	2	4/	-4/	-4	0/	0/	0	0.00	9	0/0

FIRST TRIMESTER

PT # AGE		SPH	CYL	AX	K HOR	K VERT	K AX VERT	C TH	IOP	# 8	#13B
17	R	.75	0.00	0	43.00	45.00	95	.5308	15	4	-4
	R	.75	0.00	0	42.50	44.50	90	.5134	15		
28	L	0.00	0.00	0	43.00	44.00	85	.5096	13	4	-4
	L	0.00	0.00	0	43.25	44.00	90	.4993	13		
	D	0.00	0.00	0	-.50	-.50	5	-.0174	0	0	0
	D	0.00	0.00	0	.25	0.00	5	-.0103	0		
18	R	0.00	0.00	0	45.37	44.87	80	.4882	14	0	0
	R	0.00	0.00	0	45.50	45.00	82	.4573	17		
25	L	0.00	0.00	0	45.25	45.75	90	.4894	15	0	-1
	L	0.00	0.00	0	45.00	45.75	88	.4798	17		
	D	0.00	0.00	0	.12	.12	2	-.0309	3	0	-1
	D	0.00	0.00	0	-.25	0.00	2	-.0096	2		
19	R	.25	0.00	0	40.25	40.75	81	.5016	14	1	0
	R	.25	0.00	0	40.37	40.62	87	.4837	15		
29	L	.25	0.00	0	40.62	41.12	90	.5162	13	2	0
	L	.25	0.00	0	40.37	41.62	90	.5109	15		
	D	0.00	0.00	0	.12	-.12	6	-.0179	1	1	0
	D	0.00	0.00	0	-.25	.50	0	-.0053	2		
20	R	-6.00	-.25	90	44.75	44.25	90	.5267	16	2	3
	R	-6.00	-.25	85	44.62	44.00	80	.4839	17		
29	L	-6.25	0.00	0	44.87	44.75	90	.4950	17	0	4
	L	-6.25	0.00	0	44.50	45.37	85	.4811	15		
	D	0.00	0.00	5	-.12	.25	10	-.0428	1	-2	1
	D	0.00	0.00	0	-.37	.62	5	-.0139	-2		
21	R	-.25	0.00	0	43.50	44.75	90	.5280	15	-1	-3
	R	0.00	0.00	0	43.25	44.75	90	.5090	15		
18	L	-.50	-.25	180	43.50	44.75	90	.4988	13	-1	-3
	L	-.25	-.50	165	43.37	44.87	88	.4832	14		
	D	.25	0.00	0	-.25	0.00	0	-.0190	0	0	0
	D	.25	-.25	15	-.12	.12	2	-.0156	1		
22	R	-6.25	-.50	167	43.75	44.75	89	.5075	13	-3	1
	R	-6.50	-.75	180	43.75	44.50	87	.4864	12		
26	L	-6.50	-.50	157	44.00	44.50	75	.5152	11	-1	4
	L	-7.00	-.50	180	43.75	44.75	80	.4939	12		
	D	.25	-.25	13	0.00	-.25	2	-.0211	-1	2	3
	D	-.50	0.00	23	-.25	.25	5	-.0213	1		
23	R	-1.00	-.50	90	44.62	44.00	85	.5186	13	3	-1
	R	-1.00	-.50	90	44.75	44.00	88	.4891	12		
23	L	-.50	-.50	100	44.50	44.00	90	.5082	13	3	-1
	L	-.50	-.50	100	44.37	44.00	92	.4873	11		
	D	0.00	0.00	0	.12	0.00	3	-.0950	-1	0	0
	D	0.00	0.00	0	-.12	0.00	2	-.0209	-2		
24	R	0.00	0.00	0	44.12	44.50	95	.5301	14	-1	-7
	R	0.00	0.00	0	44.00	44.75	90	.5131	14		
17	L	.25	-.25	90	44.25	44.50	110	.5357	13	-1	-5
	L	.25	-.25	90	44.25	44.75	100	.5075	14		
	D	0.00	0.00	0	-.12	.25	5	-.0170	0	0	2
	D	0.00	0.00	0	0.00	.25	10	-.0282	1		

FIRST TRIMESTER

PT	GRAD ACA	#11	#9	#10	#17A	#1	7B	#16A	#16B	NRA + -PRA	WT LB	GRAD PARA
9	4	7/ 4	6/ 14/ 10		14/ 24/ 14			14/ 28/ 16		5.25	132	2/1
	4	9/ 5	8/ 14/ 12		12/ 24/ 12			16/ 28/ 16		5.50	140	2/1
D	0	2/ 1	2/ 0/ 2		-2/ 0/ -2			2/ 0/ 0		.25	8	0/0
10	3	8/ 6	12/ 12/ 8		16/ 24/ 14			20/ 20/ 12		6.00	115	2/1
	4	7/ 5	14/ 14/ 6		12/ 22/ 14			18/ 18/ 10		6.50	126	2/1
D	1	-1/ -1	2/ 2/ -2		-4/ -2/ 0			-2/ -2/ -2		.50	11	0/0
11	2	7/ 4	12/ 14/ 10		14/ 18/ 14			8/ 8/ 6		5.75	138	2/1
	3	8/ 5	8/ 14/ 12		16/ 18/ 14			12/ 12/ 0		5.50	152	2/1
D	1	1/ 1	-4/ 0/ 2		2/ 0/ 0			4/ 4/ -6		-.25	14	0/0
12	3	7/ 6	10/ 12/ 8		16/ 20/ 18			12/ 12/ 10		6.00	130	1/0
	3	8/ 6	12/ 12/ 8		16/ 22/ 16			10/ 14/ 10		5.50	132	1/0
D	0	1/ 0	2/ 0/ 0		0/ 2/ -2			-2/ 2/ 0		-.50	2	0/0
13	4	6/ 4	12/ 18/ 12		8/ 10/ 4			14/ 18/ 10		4.75	137	1/0
	4	7/ 4	18/ 18/ 10		12/ 12/ 6			14/ 14/ 8		5.50	137	1/0
D	0	1/ 0	6/ 0/ -2		4/ 2/ 2			0/ -4/ -2		.75	0	0/0
14	3	8/ 4	12/ 16/ 10		16/ 16/ 8			16/ 16/ 8		5.00	115	2/1
	3	8/ 6	14/ 18/ 16		12/ 16/ 10			16/ 16/ 6		5.25	118	2/1
D	0	0/ 2	2/ 2/ 6		-4/ 0/ 2			0/ 0/ -2		.25	3	0/0
15	2	8/ 6	4/ 12/ 8		8/ 28/ 22			8/ 22/ -8		4.00	141	3/2
	3	8/ 6	4/ 10/ 6		8/ 24/ 12			8/ 16/ 0		5.00	146	3/2
D	1	0/ 0	0/ -2/ -2		0/ -4/ -10			0/ -6/ 8		1.00	5	0/0
16	2	9/ 5	8/ 16/ 8		10/ 16/ 8			4/ 8/ 4		4.50	146	3/2
	2	9/ 3	12/ 16/ 0		8/ 16/ 6			4/ 10/ 0		4.25	155	3/2
D	0	0/ 2	4/ 0/ -8		-2/ 0/ -2			0/ 2/ -4		-.25	9	0/0

FIRST TRIMESTER

PT # AGE		SPH	CYL	AX	K HOR	K VERT	K AX VERT	C TH	IOP	# 8	#13B
9	R	-.25	0.00	0	43.00	43.50	90	.4834	14	-1	-2
	R	-.25	0.00	0	42.50	43.37	85	.5041	13		
28	L	-.25	0.00	0	43.00	44.00	90	.5117	12	-1	-2
	L	.25	0.00	0	43.50	44.12	88	.5428	13		
	D	0.00	0.00	0	-.50	-.12	5	.0207	-1	0	0
	D	0.00	0.00	0	.50	.12	2	.0311	1		
10	R	-1.25	0.00	0	43.50	44.50	90	.4901	12	0	-2
	R	-1.25	0.00	0	44.00	44.75	87	.5037	12		
18	L	-1.25	0.00	0	44.25	45.00	80	.4882	13	0	-1
	L	-1.25	0.00	0	44.00	45.12	85	.4998	14		
	D	0.00	0.00	0	.50	.25	3	.0136	0	0	1
	D	0.00	0.00	0	-.25	-.12	5	.0116	1		
11	R	-1.00	0.00	0	44.25	45.75	72	.4869	16	-2	0
	R	-.75	0.00	0	44.37	45.62	75	.5056	15		
20	L	-.75	0.00	0	45.75	45.75	80	.4957	15	-2	0
	L	-1.00	0.00	0	45.62	45.75	78	.5088	15		
	D	.25	0.00	0	.12	-.12	3	.0187	-1	0	0
	D	-.25	0.00	0	-.12	0.00	2	.0131	0		
12	R	-3.25	-.25	155	43.50	44.00	95	.4885	13	-1	-2
	R	-3.00	-.25	155	43.75	44.50	88	.5355	12		
24	L	-3.25	-.25	150	44.00	44.25	90	.4977	13	-1	-2
	L	-3.00	-.25	150	43.87	44.12	85	.5089	13		
	D	.25	0.00	0	-.25	.50	7	.0470	-1	0	0
	D	.25	0.00	0	-.12	-.12	5	.0112	0		
13	R	-4.00	0.00	0	43.75	45.00	77	.4995	13	-2	-2
	R	-4.00	0.00	0	44.00	45.00	72	.4873	13		
25	L	-2.75	0.00	0	44.50	45.75	87	.5037	12	0	-2
	L	-2.75	0.00	0	44.50	45.50	92	.4901	12		
	D	0.00	0.00	0	.25	0.00	5	-.0122	0	2	0
	D	0.00	0.00	0	0.00	-.25	5	-.0136	0		
14	R	0.00	0.00	0	44.00	44.50	88	.5000	16	-3	5
	R	0.00	0.00	0	44.37	44.25	85	.4927	14		
23	L	0.00	0.00	0	44.00	44.50	85	.4985	13	-1	2
	L	0.00	0.00	0	44.12	44.25	88	.4811	14		
	D	0.00	0.00	0	.37	-.25	3	-.0073	-2	2	-3
	D	0.00	0.00	0	.12	-.25	3	-.0174	1		
15	R	-.50	0.00	0	44.50	45.50	85	.5700	14	2	-5
	R	-.25	0.00	0	44.62	45.37	80	.5463	15		
22	L	-.25	0.00	0	44.00	45.25	94	.5729	12	0	-4
	L	0.00	0.00	0	44.00	45.50	90	.5567	13		
	D	.25	0.00	0	.12	-.12	5	-.0237	1	-2	1
	D	.25	0.00	0	0.00	.25	4	-.0162	1		
16	R	-9.00	0.00	0	43.12	43.25	92	.5099	11	0	0
	R	-9.00	0.00	0	43.00	43.25	85	.5063	11		
30	L	-8.75	0.00	0	42.87	43.87	100	.5180	10	0	0
	L	-8.75	0.00	0	42.75	43.87	95	.5012	10		
	D	0.00	0.00	0	-.12	0.00	7	-.0036	0	0	0
	D	0.00	0.00	0	-.12	0.00	5	-.0168	0		

FIRST TRIMESTER

PT	GRAD ACA	#11	#9	#10	#17A	#17B	#16A	#16B	NRA + -PRA	WT LB	GRAV PARA
1	3	7/ 5	10/	12/ 5	18/	20/ 12	15/	15/ 12	5.75	118	3/2
	5	8/ 3	10/	12/ 5	20/	22/ 18	16/	16/ 10	6.00	130	3/2
D	2	1/ -2	0/	0/ 0	2/	2/ 6	1/	1/ -2	.25	12	0/0
2	3	7/ 4	8/	8/ 2	14/	22/ 16	14/	14/ 9	4.00	126	4/3
	3	5/ 1	8/	8/ 4	12/	20/ 16	16/	16/ 8	3.25	139	4/3
D	0	-2/ -3	0/	0/ 2	-2/	-2/ 0	2/	2/ -1	-.75	13	0/0
3	2	7/ 4	12/	14/10	14/	18/ 14	8/	8/ 6	5.75	138	1/0
	3	8/ 5	8/	14/12	16/	18/ 14	12/	12/ 0	5.50	152	1/0
D	1	1/ 1	-4/	0/ 2	2/	0/ 0	4/	4/ -6	-.25	14	0/0
4	3	7/ 6	6/	12/ 6	16/	20/ 18	12/	17/ 8	6.00	122	3/2
	5	7/ 4	6/	8/ 6	14/	20/ 14	10/	14/ 2	5.50	122	3/2
D	2	0/ -2	0/	-4/ 0	-2/	0/ -4	-2/	-3/ -6	-.50	0	0/0
5	4	6/ 1	9/	18/12	5/	10/ 3	14/	18/ 10	4.75	135	5/0
	4	7/ 4	18/	18/ 6	12/	12/ 6	14/	14/ 2	5.50	148	5/0
D	0	1/ 3	9/	0/-6	7/	2/ 3	0/	-4/ -8	.75	13	0/0
6	3	8/ 4	16/	24/16	16/	16/ 2	18/	18/ 8	4.75	115	2/1
	3	8/ 2	14/	18/16	16/	20/ 0	18/	18/ 8	5.25	118	2/1
D	0	0/ -2	-2/	-6/ 0	0/	4/ -2	0/	0/ 0	.50	3	0/0
7	5	8/ 3	12/	28/ 8	12/	12/ 4	18/	18/ 8	7.00	154	4/3
	3	8/ 3	28/	28/16	12/	16/ 8	18/	18/ 8	6.00	159	4/3
D	-2	0/ 0	16/	0/ 8	0/	4/ 4	0/	0/ 0	-1.00	5	0/0
8	4	9/ 5	8/	20/10	14/	22/ 18	14/	20/ 14	4.00	125	1/0
	3	8/ 6	10/	18/ 8	12/	22/ 16	14/	22/ 16	4.00	134	1/0
D	-1	-1/ 1	2/	-2/-2	-2/	0/ -2	0/	2/ 2	0.00	9	0/0

FIRST TRIMESTER

PT # AGE		SPH	CYL	AX	K HOR	K VERT	K AX VERT	C TH	IOP	# 8	#13B
1	R	0.00	0.00	0	44.00	44.00	90	.5044	11	-1	-1
	R	0.00	0.00	0	44.12	44.00	95	.5145	11		
29	L	.50	-.25	90	43.50	43.00	100	.5086	10	0	-3
	L	.50	-.25	90	44.00	43.75	80	.4839	13		
	D	0.00	0.00	0	.12	0.00	5	.0101	0	1	-2
	D	0.00	0.00	0	.50	.75	20	-.0247	3		
2	R	.25	-.50	180	42.50	43.75	90	.4881	13	0	-12
	R	.25	-.50	165	42.25	44.00	87	.4859	13		
32	L	.25	-.50	180	41.75	42.00	80	.5289	14	0	-12
	L	.25	-.50	165	42.00	42.00	80	.5495	14		
	D	0.00	0.00	15	-.25	.25	3	-.0022	0	0	0
	D	0.00	0.00	15	.25	0.00	0	.0206	0		
3	R	0.00	0.00	0	43.50	44.00	70	.4922	16	0	-4
	R	0.00	0.00	0	43.75	44.00	70	.5182	16		
21	L	0.00	0.00	0	44.00	44.00	90	.4820	15	-1	-4
	L	0.00	0.00	0	44.25	44.25	90	.5006	15		
	D	0.00	0.00	0	.25	0.00	0	.0260	0	-1	0
	D	0.00	0.00	0	.25	.25	0	.0186	0		
4	R	-.25	0.00	0	46.00	46.50	85	.5122	11	0	-1
	R	-.25	0.00	0	46.00	47.00	85	.4820	12		
36	L	-.25	0.00	0	46.00	46.37	88	.5085	11	2	1
	L	-.25	0.00	0	46.25	46.75	88	.5471	10		
	D	0.00	0.00	0	0.00	.50	0	.5122	1	2	2
	D	0.00	0.00	0	.25	.37	0	.0386	-1		
5	R	.25	0.00	0	43.75	45.00	77	.4947	11	-2	-2
	R	.25	0.00	0	44.50	45.75	72	.4803	9		
30	L	0.00	0.00	0	44.00	45.00	87	.5234	11	0	-2
	L	0.00	0.00	0	43.50	45.50	92	.5125	9		
	D	0.00	0.00	0	-.75	.75	5	-.0144	-2	2	0
	D	0.00	0.00	0	-.50	.50	5	-.0109	-2		
6	R	-2.25	0.00	0	44.00	44.50	85	.4937	16	-3	-5
	R	-2.25	0.00	0	44.00	44.50	85	.4873	14		
22	L	-2.25	0.00	0	44.00	44.50	85	.5003	13	-1	-2
	L	-2.25	0.00	0	44.12	44.25	88	.4993	14		
	D	0.00	0.00	0	0.00	0.00	0	-.0064	-2	2	3
	D	0.00	0.00	0	.12	-.25	3	-.0010	1		
7	R	-.25	-.75	107	44.62	44.37	87	.4838	12	-1	-3
	R	0.00	-1.00	107	44.12	44.50	82	.5463	9		
31	L	0.00	-.75	75	44.50	43.87	88	.4833	10	0	-1
	L	0.00	-.75	80	43.75	44.12	80	.5402	9		
	D	.25	-.25	0	-.50	.12	5	.0625	-3	1	2
	D	0.00	0.00	5	.75	.25	8	.0569	-1		
8	R	-1.00	0.00	0	46.00	46.50	88	.5238	15	-1	-3
	R	-1.00	0.00	0	46.25	46.75	85	.4963	15		
22	L	-1.00	0.00	0	46.25	47.00	88	.5314	15	0	0
	L	-1.00	0.00	0	46.00	46.75	85	.4812	15		
	D	0.00	0.00	0	.25	.25	3	-.0275	0	1	3
	D	0.00	0.00	0	-.25	.25	3	-.0502	0		

CONTROL GROUP

PT	GRAD ACA	#11		#9	#10		#17A	#17B		#16A	#16B		NRA + -PRA	WT LB	GRAV PARA
33	5	7/	4	12/	16/	6	10/	16/	4	12/	16/	14	5.50	120	0/ 0
	4	6/	3	16/	16/	4	8/	16/	4	14/	18/	8	5.00	120	0/ 0
D	-1	-1/	-1	4/	0/	-2	-2/	0/	0	2/	2/	-6	-.50	0	0/ 0
34	1	4/	2	12/	12/	8	8/	20/	12	12/	16/	8	4.75	118	3/ 2
	2	5/	3	10/	10/	6	8/	14/	6	16/	20/	8	4.75	118	3/ 2
D	1	1/	1	-2/	-2/	-2	0/	-6/	-6	4/	4/	0	0.00	0	0/ 0
35	4	7/	3	14/	14/	4	16/	16/	6	12/	12/	4	4.50	108	1/ 1
	4	8/	7	16/	16/	8	8/	12/	4	16/	16/	8	4.00	108	1/ 1
D	0	1/	4	2/	2/	4	-8/	-4/	-2	4/	4/	4	-.50	0	0/ 0
36	3	8/	6	12/	12/	10	16/	16/	8	34/	34/	16	4.50	155	1/ 1
	3	5/	4	8/	8/	6	14/	14/	4	28/	28/	16	4.25	158	1/ 1
D	0	-3/	-2	-4/	-4/	-4	-2/	-2/	-4	-6/	-6/	0	-.25	3	0/ 0
37	3	7/	5	12/	12/	8	6/	6/	2	16/	16/	4	4.50	125	3/ 3
	3	4/	2	10/	10/	6	4/	4/	0	16/	16/	6	3.75	125	3/ 3
D	0	-3/	-3	-2/	-2/	-2	-2/	-2/	-2	0/	0/	2	-.75	0	0/ 0
38	3	7/	6	4/	12/	8	12/	12/	6	6/	16/	6	5.50	138	2/ 2
	2	5/	4	8/	8/	6	10/	16/	10	10/	12/	6	6.50	138	2/ 2
D	1	-1/	-2	4/	-4/	-2	-2/	4/	4	4/	-4/	0	1.00	0	0/ 0

CONTROL GROUP

PT	GRAD ACA	#11		#9	#10		#17A	#17B		#16A	#16B		NRA + -PRA	WT LB	GRAV PARA	
25	4	9/	6	12/	26/	6	18/	24/	12	18/	24/	6	6.75	107	0/	0
	3	7/	5	16/	28/	10	20/	24/	14	20/	20/	8	7.50	107	0/	0
D	-1	2/	-1	4/	2/	4	2/	0/	2	2/	4/	2	.75	0	0/	0
26	4	4/	2	8/	8/	4	12/	16/	14	18/	20/	16	5.00	155	4/	4
	3	3/	1	8/	8/	6	12/	16/	12	16/	16/	10	4.75	155	4/	4
D	-1	-1/	-1	0/	0/	2	0/	0/	-2	-2/	-4/	-6	-.25	0	0/	0
27	2	4/	2	22/	22/	8	12/	14/	4	20/	20/	6	6.25	125	2/	2
	3	3/	0	18/	18/	4	16/	16/	8	16/	16/	4	5.75	125	2/	2
D	1	-1/	-2	-4/	-4/	-4	4/	2/	4	-4/	-4/	-2	-.50	0	0/	0
28	3	9/	6	8/	10/	4	24/	28/	20	14/	14/	4	5.50	125	4/	4
	2	9/	6	6/	10/	6	18/	26/	18	16/	20/	16	5.00	125	4/	4
D	-1	0/	0	-2/	0/	2	-6/	-2/	-2	2/	6/	12	-.50	0	0/	0
29	3	4/	3	6/	6/	4	8/	16/	12	12/	12/	6	4.50	116	2/	2
	4	4/	2	6/	6/	4	8/	20/	16	16/	16/	4	4.00	116	2/	2
D	1	0/	-1	0/	0/	0	0/	4/	4	4/	4/	-2	-.50	0	0/	0
30	3	4/	3	10/	10/	6	8/	14/	6	16/	16/	8	6.50	160	5/	5
	3	6/	4	14/	14/	6	8/	8/	0	16/	16/	8	6.25	160	5/	5
D	0	2/	1	4/	4/	0	0/	-6/	-6	0/	0/	0	-.25	0	0/	0
31	4	6/	4	8/	8/	4	12/	24/	20	20/	20/	16	3.75	120	5/	5
	4	6/	4	8/	8/	6	8/	24/	16	16/	16/	8	3.25	120	5/	5
D	0	0/	0	0/	0/	2	-4/	0/	4	-4/	-4/	-8	-.50	0	0/	0
32	1	4/	2	8/	8/	6	12/	14/	4	20/	20/	12	4.50	145	5/	5
	1	5/	4	8/	8/	6	14/	24/	16	6/	8/	0	5.00	145	5/	5
D	0	1/	2	0/	0/	0	2/	10/	12	-14/	-12/	-12	.50	0	0/	0

CONTROL GROUP

PT # AGE		SPH	CYL	AX	K HOR	K VERT	K AX VERT	C TH	IOP	# 8	#13B
25	R	0.00	0.00	0	43.12	44.50	88	.4849	12	0	-1
	R	0.00	0.00	0	43.50	45.00	90	.5143	12		
17	L	0.00	0.00	0	43.00	44.50	88	.5376	12	0	-1
	L	0.00	0.00	0	43.37	44.62	90	.5151	13		
	D	0.00	0.00	0	.37	-.50	2	-.0294	0	0	0
	D	0.00	0.00	0	.37	.12	2	-.0225	1		
26	R	0.00	0.00	0	42.50	43.25	90	.5316	12	0	-4
	R	-.25	0.00	0	42.62	43.50	88	.5150	11		
31	L	0.00	0.00	0	42.50	43.50	88	.5227	11	0	-5
	L	0.00	0.00	0	42.62	43.25	88	.4802	14		
	D	-.25	0.00	0	.12	.25	2	.0166	-1	0	-1
	D	0.00	0.00	0	.12	-.25	0	-.0425	3		
27	R	.75	-1.25	112	43.25	44.25	55	.5106	12	1	1
	R	.50	-1.25	112	43.37	43.87	60	.5079	13		
24	L	1.75	-1.50	67	43.00	44.50	130	.5032	13	3	-1
	L	1.50	-1.75	67	43.25	44.87	130	.4891	12		
	D	.25	0.00	0	.12	-.37	5	-.0027	1	2	-2
	D	.25	-.25	0	.25	.37	0	-.0141	-1		
28	R	-1.00	-.25	90	46.75	47.00	90	.5203	18	-1	-1
	R	-1.00	-.25	90	46.37	46.87	87	.4849	19		
31	L	-1.00	-.50	90	46.50	46.87	83	.5332	19	0	0
	L	-1.00	-.50	90	46.37	47.12	88	.5014	19		
	D	0.00	0.00	0	-.37	-.12	3	-.0354	1	1	1
	D	0.00	0.00	0	-.12	.25	5	-.0318	0		
29	R	0.00	0.00	0	45.12	45.87	88	.5154	12	0	-3
	R	0.00	0.00	0	45.00	45.62	86	.5029	13		
35	L	.25	-.25	90	45.00	45.25	88	.5493	14	1	-1
	L	.25	-.50	90	44.87	45.50	90	.5641	11		
	D	0.00	0.00	0	-.12	-.25	2	-.0125	1	1	2
	D	0.00	.25	0	-.12	.25	2	-.0252	3		
30	R	-.25	0.00	0	44.00	44.87	84	.5038	13	0	-1
	R	-.25	0.00	0	44.00	45.00	85	.4800	15		
28	L	-.50	0.00	0	44.00	45.25	100	.4806	12	1	0
	L	-.50	0.00	0	44.00	45.25	100	.5063	14		
	D	0.00	0.00	0	0.00	.12	1	-.0238	2	1	1
	D	0.00	0.00	0	0.00	0.00	0	.0257	2		
31	R	0.00	0.00	0	42.87	44.62	88	.5129	10	0	-4
	R	0.00	0.00	0	43.12	44.87	86	.4944	10		
33	L	0.00	0.00	0	42.87	44.12	88	.5024	9	0	-2
	L	.25	0.00	0	43.00	44.50	88	.4842	9		
	D	0.00	0.00	0	.25	.25	2	-.0185	0	0	-2
	D	.25	0.00	0	.12	.37	0	-.0182	0		
32	R	-1.50	-.50	105	44.62	44.87	88	.5142	12	2	1
	R	-1.50	-.50	105	45.00	44.87	88	.4858	13		
32	L	-1.25	-.75	70	45.37	45.50	88	.5260	13	2	1
	L	-1.25	-1.00	70	45.25	45.50	80	.4922	12		
	D	0.00	0.00	0	.37	0.00	0	.0284	1	0	0
	D	0.00	-.25	0	-.12	0.00	8	-.0338	-1		

CONTROL GROUP

PT	GRAD ACA	#11		#9	#10		#17A	#17B		#16A	#16B		NRA + -PRA	WT LB	GRAV PARA	
17	4	7/	5	12/	18/	10	16/	20/	14	14/	14/	6	5.25	215	3/	3
	4	5/	4	6/	12/	8	8/	16/	8	14/	16/	8	5.25	215	3/	3
D	0	-2/	-1	-6/	-6/	-2	-8/	-4/	-6	0/	2/	2	0.00	0	0/	0
18	1	7/	6	8/	24/	6	18/	20/	16	10/	16/	6	4.75	148	1/	1
	2	5/	4	12/	16/	14	8/	12/	8	12/	16/	4	5.00	148	1/	1
D	1	-2/	-2	4/	-8/	8	-10/	-8/	-8	2/	0/	-2	.25	0	0/	0
19	2	4/	1	16/	20/	8	14/	14/	8	16/	16/	6	6.75	160	4/	4
	2	5/	3	16/	20/	8	16/	16/	4	10/	12/	4	6.00	155	4/	4
D	0	1/	2	0/	0/	0	2/	2/	-4	-6/	-4/	-2	-.75	-5	0/	0
20	1	8/	6	16/	16/	12	24/	24/	16	20/	28/	20	5.25	140	8/	8
	2	9/	6	6/	10/	6	18/	26/	18	16/	20/	16	5.25	140	8/	8
D	1	1/	0	-10/	-6/	-6	-6/	2/	2	-4/	-8/	-4	0.00	0	0/	0
21	2	8/	6	16/	16/	12	16/	24/	16	18/	18/	8	5.25	155	5/	1
	3	9/	7	10/	12/	8	10/	24/	12	16/	16/	8	4.50	145	5/	1
D	1	1/	1	-6/	-4/	-4	-6/	0/	-4	-2/	-2/	0	-.75	-10	0/	0
22	2	6/	5	12/	12/	6	6/	18/	12	12/	24/	16	6.75	156	4/	4
	4	8/	5	8/	14/	8	6/	22/	16	10/	14/	10	6.50	156	4/	4
D	2	2/	0	-4/	2/	2	0/	4/	4	-2/	-10/	-6	-.25	0	0/	0
23	2	4/	2	12/	12/	10	16/	24/	16	12/	18/	4	7.00	155	3/	3
	2	6/	3	14/	14/	8	14/	20/	16	[illegible]	10/	6	6.00	155	3/	3
D	0	2/	1	2/	2/	-2	-2/	-4/	0	-4/	-8/	2	-1.00	0	0/	0
24	1	6/	5	10/	12/	4	12/	22/	14	8/	10/	0	3.25	130	2/	2
	1	5/	4	8/	8/	6	14/	24/	16	6/	8/	0	2.50	130	2/	2
D	0	-1/	-1	-2/	-4/	2	2/	2/	2	-2/	-2/	0	-.75	0	0/	0

CONTROL GROUP

PT # AGE		SPH	CYL	AX	K HOR	K VERT	K AX VERT	C TH	IOP	# 8	#13B
17	R	-.25	0.00	0	44.50	45.25	90	.5608	13	-1	-1
	R	-.25	0.00	0	44.50	45.25	90	.4845	11		
29	L	-.25	-.25	180	44.25	45.37	90	.5476	11	0	-1
	L	-.25	-.25	180	44.25	45.50	90	.4932	10		
	D	0.00	0.00	0	0.00	0.00	0	-.0763	-2	1	0
	D	0.00	0.00	0	0.00	.12	0	-.0544	-1		
18	R	0.00	-.25	180	42.50	43.75	90	.5245	15	0	0
	R	.25	-.25	180	42.75	43.75	88	.5594	13		
34	L	.25	-.50	155	42.50	43.25	90	.5672	15	0	0
	L	.50	-.50	155	42.50	43.50	85	.5364	13		
	D	.25	0.00	0	.25	0.00	2	.0349	-2	0	0
	D	.25	0.00	0	0.00	.25	5	-.0308	-2		
19	R	0.00	-.50	125	45.50	45.25	90	.5187	14	1	0
	R	0.00	-.50	125	45.50	45.25	90	.4957	14		
23	L	0.00	-.50	60	45.62	45.50	110	.4849	16	1	-1
	L	0.00	-.50	60	45.62	45.00	115	.4615	16		
	D	0.00	0.00	0	0.00	0.00	0	-.0230	0	0	-1
	D	0.00	0.00	0	0.00	-.50	5	-.0234	0		
20	R	0.00	0.00	0	42.50	43.00	85	.5195	10	0	-4
	R	0.00	0.00	0	42.62	43.37	88	.4954	11		
38	L	.25	-.50	157	42.75	43.62	78	.5034	9	1	-6
	L	.25	-.50	157	42.50	43.50	79	.4891	10		
	D	0.00	0.00	0	.12	.37	3	-.0241	1	1	-2
	D	0.00	0.00	0	-.25	-.12	1	-.0143	1		
21	R	-.50	0.00	0	45.25	45.75	83	.4887	16	0	-1
	R	-.50	0.00	0	45.25	45.50	85	.4746	17		
27	L	-.25	-.25	60	45.37	45.75	98	.5104	15	0	-2
	L	-.25	-.25	60	45.62	45.75	93	.5285	16		
	D	0.00	0.00	0	0.00	-.25	2	-.0141	1	0	-1
	D	0.00	0.00	0	.25	0.00	5	.0181	1		
22	R	-.25	-1.25	115	44.75	45.50	84	.5077	13	1	3
	R	-.25	-1.25	120	44.75	45.75	90	.4855	12		
33	L	-.75	-1.25	65	44.37	45.37	90	.4964	13	2	3
	L	-.75	-1.25	60	44.75	45.50	85	.4863	14		
	D	0.00	0.00	5	0.00	.25	6	-.0222	-1	1	0
	D	0.00	0.00	5	.37	.12	5	-.0101	1		
23	R	-1.25	-.25	85	42.50	43.50	80	.4806	13	0	-4
	R	-1.00	-.50	90	42.62	43.37	80	.4965	14		
32	L	-1.25	-.50	88	42.75	43.62	75	.5953	11	0	-4
	L	-1.00	-.75	90	42.50	43.37	70	.5231	10		
	D	.25	-.25	5	.12	-.12	0	.0159	1	0	0
	D	.25	-.25	2	-.25	-.25	5	-.0722	-1		
24	R	0.00	0.00	0	45.50	46.00	83	.5310	17	-2	-9
	R	-.25	0.00	0	45.50	45.62	86	.5143	17		
33	L	-.75	0.00	0	45.50	46.25	75	.4882	18	-1	-7
	L	-.75	0.00	0	45.25	46.00	82	.4801	18		
	D	-.25	0.00	0	0.00	-.37	3	-.0167	0	1	2
	D	0.00	0.00	0	-.25	-.25	7	-.0081	0		

CONTROL GROUP

PT	GRAD ACA	#11	#9	#10	#17A	#17B	#16A	#16B	NRA + -PRA	WT LB	GRAV PARA
9	0	9/ 4	18/	23/ 20	20/	24/ 12	24/	24/ 6	5.75	125	7/ 5
	0	6/ 5	20/	28/ 16	24/	28/ 16	20/	20/ 6	5.00	125	7/ 5
D	0	-3/ 1	2/	5/ -4	4/	4/ 4	-4/	-4/ 0	-.75	0	0/ 0
10	4	9/ 2	22/	22/ 10	22/	22/ 14	18/	18/ 6	6.00	160	1/ 1
	3	7/ 2	16/	16/ 12	16/	24/ 12	16/	16/ 8	7.00	160	1/ 1
D	-1	-2/ 0	-6/	-6/ 2	-6/	2/ -2	-2/	-2/ 2	1.00	0	0/ 0
11	3	5/ 3	8/	18/ 6	14/	16/ 12	16/	16/ 6	6.00	150	3/ 3
	3	8/ 5	8/	28/ 12	18/	26/ 14	14/	14/ 0	5.75	150	3/ 3
D	0	3/ 2	0/	10/ 6	4/	10/ 2	-2/	-2/ -6	-.25	0	0/ 0
12	4	7/ 5	8/	8/ 6	20/	24/ 14	10/	10/ 8	5.75	217	4/ 3
	2	6/ 4	6/	6/ 4	24/	24/ 18	8/	8/ 0	5.75	217	4/ 3
D	-2	-1/ -1	-2/	-2/ -2	4/	0/ 4	-2/	-2/ 8	0.00	0	0/ 0
13	3	8/ 4	8/	12/ 8	16/	16/ 12	14/	14/ 8	4.75	218	3/ 3
	4	7/ 5	16/	16/ 12	20/	20/ 16	16/	16/ 8	5.50	218	3/ 3
D	1	-1/ 1	8/	4/ 4	4/	4/ 4	2/	2/ 0	.75	0	0/ 0
14	3	6/ 5	6/	12/ 10	12/	18/ 14	12/	18/ 4	4.75	118	4/ 4
	3	4/ 3	6/	12/ 10	12/	18/ 12	16/	16/ 4	5.75	115	4/ 4
D	0	-2/ -2	0/	0/ 0	0/	0/ -2	4/	-2/ 0	1.00	-3	0/ 0
15	4	9/ 7	6/	6/ 2	10/	22/ 14	12/	12/ 8	4.25	160	6/ 6
	4	7/ 5	4/	4/ 0	12/	24/ 16	10/	10/ 6	5.00	155	6/ 6
D	0	-2/ -2	-2/	-2/ -2	2/	2/ 2	-2/	-2/ -2	.75	-5	0/ 0
16	3	6/ 5	8/	10/ 8	14/	18/ 8	18/	18/ 4	5.00	155	9/ 9
	3	6/ 5	8/	10/ 8	16/	16/ 14	16/	16/ 8	4.75	155	9/ 9
D	0	0/ 0	0/	0/ 0	2/	-2/ 6	-2/	-2/ 4	-.25	0	0/ 0

SECOND TRIMESTER

PT # AGE		SPH	CYL	AX	K HOR	K VERT	K AX VERT	C TH	IOP	# 8	#13B
1	R	-.25	0.00	0	44.50	45.12	90	.4871	11	1	-4
	R	-.50	0.00	0	44.50	45.37	95	.5467	14		
24	L	-.25	0.00	*90	44.12	45.00	90	.4904	10	1	-4
	L	.50	-.25	90	44.00	43.75	90	.5039	13		
	D	-.25	0.00	0	0.00	.25	5	.0596	3	0	0
	D	-.25	.25	0	-.12	-1.25	0	.0135	3		
2	R	-2.75	-.50	180	45.75	47.00	87	.4800	13	0	-2
	R	-2.50	-.50	180	45.50	47.00	92	.4852	14		
25	L	-2.50	-.50	180	45.00	46.87	85	.4856	14	0	-2
	L	-2.25	-.75	180	45.50	47.00	90	.5275	15		
	D	.25	0.00	0	-.25	0.00	5	.0052	1	0	0
	D	.25	-.25	0	.50	.12	5	.0419	1		
3	R	2.00	-.50	90	45.00	46.00	87	.5700	12	-1	-8
	R	2.00	-.75	90	45.37	45.62	85	.4819	11		
17	L	2.00	-.75	90	45.50	45.87	92	.5339	12	1	-5
	L	2.00	-.50	90	45.37	45.50	88	.4915	11		
	D	0.00	-.25	0	.37	-.37	2	-.0881	-1	0	3
	D	0.00	-.25	0	-.12	-.37	4	-.0424	-1		
4	R	-7.25	-.50	180	43.00	43.50	75	.4849	10	0	-5
	R	-7.50	-.50	180	43.50	43.75	80	.5212	10		
40	L	-8.00	-.25	180	43.00	44.00	90	.4863	9	0	-5
	L	-8.25	-.50	180	43.87	44.87	88	.5235	9		
	D	-.25	0.00	0	.50	.25	5	.0363	0	0	0
	D	-.25	-.25	0	.87	.87	2	.0372	0		
5	R	-1.00	-1.25	105	46.50	44.50	105	.4857	14	0	-3
	R	-1.00	-1.25	102	46.75	44.50	100	.5318	12		
20	L	-1.25	-1.50	75	47.00	45.50	70	.5131	14	-1	-4
	L	-1.00	-1.75	70	47.25	45.00	77	.5340	13		
	D	0.00	0.00	3	.25	0.00	5	.0461	-2	-1	-1
	D	.25	-.25	5	.25	-.50	7	.0209	-1		
6	R	-2.00	0.00	0	42.37	43.75	90	.5238	10	2	0
	R	-1.75	0.00	0	42.00	43.00	87	.5583	9		
29	L	-1.25	0.00	0	42.00	43.00	90	.5117	8	2	-2
	L	-1.50	0.00	0	41.62	43.00	88	.5735	8		
	D	.25	0.00	0	-.37	-.75	3	.0345	-1	0	-2
	D	-.25	0.00	0	-.37	0.00	2	.0618	0		
7	R	1.00	-.75	150	41.12	42.12	85	.5338	9	1	-2
	R	1.00	-.75	155	41.00	42.75	78	.5229	9		
27	L	.25	0.00	0	41.00	42.37	90	.4848	9	1	-2
	L	.25	0.00	0	41.00	42.37	90	.4715	9		
	D	0.00	0.00	5	-.12	.62	7	-.0109	0	0	0
	D	0.00	0.00	0	0.00	0.00	0	-.0133	0		
8	R	-3.75	0.00	0	42.87	43.37	90	.5757	17	-1	1
	R	-4.00	0.00	0	43.00	43.25	85	.4942	14		
26	L	-3.25	0.00	0	43.50	44.00	85	.5908	15	0	0
	L	-3.50	0.00	0	43.50	44.00	88	.5567	12		
	D	-.25	0.00	0	.12	-.12	5	-.0815	-3	1	-1
	D	-.25	0.00	0	0.00	0.00	3	-.0331	-3		

SECOND TRIMESTER

PT	GRAD ACA	#11	#9	#10	#17A	#17B	#16A	#16B	NRA + -PRA	WT LB	GRAV PARA
1	4	8/ 4	4/ 10/ 2		16/ 24/ 12		12/ 12/ -3		5.50	163	4/3
	4	8/ 6	4/ 10/ 4		16/ 22/ 14		12/ 12/ -6		6.00	175	4/3
D	0	0/ 2	0/ 0/ 2		0/ -2/ 2		0/ 0/ -3		.50	12	0/0
2	3	8/ 5	6/ 18/ 16		12/ 16/ 14		12/ 12 8		5.75	164	3/2
	4	6/ 4	6/ 9/ 17		12/ 12/ 6		7/ 7/ 4		5.50	177	3/2
D	1	-2/ -1	0/ -9/ 1		0/ -4/ -8		-5/ -5/ -4		-.25	13	0/0
3	1	6/ 3	16/ 20/ 8		14/ 20/ 8		14/ 16/ -2		4.75	161	1/0
	2	5/ 2	10/ 16/ 8		14/ 20/ 8		14/ 16/ -2		4.50	173	1/0
D	1	-1/ 1	-6/ -4/ 0		0/ 0/ 0		0/ 0/ 0		-.25	12	0/0
4	3	7/ 6	18/ 20/ 16		12/ 24/ 16		16/ 16/ 12		6.75	204	7/6
	3	9/ 6	18/ 20/ 16		8/ 22/ 18		12/ 12/ 4		6.00	210	7/6
D	0	2/ 0	0/ 0/ 0		-4/ -2/ 2		-4/ -4/ -8		-.75	6	0/0
5	2	9/ 7	16/ 22/ 14		18/ 18/ 14		24/ 24/ 9		5.75	128	1/0
	2	7/ 4	16/ 16/ 14		12/ 18/ 16		16/ 18/ 12		5.00	144	1/0
D	0	-2/ -3	0/ -6/ 0		-6/ 0/ 2		-8/ -6/ 3		-.75	16	0/0
6	1	7/ 6	14/ 14/ 12		16/ 20/ 16		10/ 18/ 12		7.00	105	6/5
	5	8/ 6	6/ 6/ 2		12/ 22/ 16		18/ 18/ 0		6.50	144	6/5
D	4	1/ 0	-8/ -8/ 10		-4/ 2/ 0		8/ 0/ -12		-.50	39	0/0
7	4	9/ 7	12/ 14/ 4		18/ 28/ 16		9/ 9/ -4		7.25	144	2/1
	4	9/ 7	12/ 14/ 4		18/ 28/ 16		9/ 9/ -4		7.25	158	2/1
D	0	0/ 0	0/ 0/ 0		0/ 0/ 0		0/ 0/ 0		0.00	14	0/0
8	2	6/ 3	12/ 14/ 5		10/ 16/ 12		20/ 24/ 12		7.50	153	3/2
	1	9/ 7	16/ 16/ 12		16/ 24/ 16		24/ 32/ 12		7.00	161	3/2
D	-1	3/ 4	4/ 2/ 7		6/ 8/ 4		4/ 8/ 0		-.50	8	0/0

SECOND TRIMESTER

PT # AGE		SPH	CYL	AX	K HOR	K VERT	K AX VERT	C TH	IOP	# 8	#13B
9	R	0.00	0.00	0	43.00	43.50	80	.4858	10	-1	-3
	R	0.00	0.00	0	43.00	44.87	85	.4996	9		
28	L	0.00	0.00	0	43.50	44.00	90	.5053	9	0	-2
	L	0.00	0.00	0	43.75	43.87	85	.5113	9		
	D	0.00	0.00	0	0.00	1.37	5	.0138	-1	1	1
	D	0.00	0.00	0	.25	-.12	5	.0060	0		
10	R	-.25	-.75	180	41.50	42.50	90	.5683	11	-1	-1
	R	-.25	-1.00	180	41.50	42.50	88	.4919	10		
27	L	-.25	-1.00	170	42.00	43.00	90	.6011	12	0	0
	L	0.00	-1.00	170	41.75	43.25	75	.5730	9		
	D	0.00	-.25	0	0.00	0.00	2	-.0764	-1	1	1
	D	.25	0.00	0	-.25	.25	15	-.0281	-3		
11	R	-3.00	-.25	180	42.87	43.87	90	.5487	16	0	-3
	R	-3.00	-.25	180	43.00	44.00	90	.4719	16		
28	L	-3.00	-.25	180	43.75	43.50	90	.5560	14	0	-5
	L	-3.00	-.50	180	43.75	43.00	88	.5019	15		
	D	0.00	0.00	0	-.12	.12	0	-.0768	0	0	-2
	D	0.00	-.25	0	0.00	-.50	2	-.0541	1		
12	R	0.00	0.00	0	43.50	44.00	80	.5493	16	-1	-6
	R	0.00	0.00	0	43.62	44.37	83	.5231	14		
15	L	0.00	0.00	0	43.50	44.12	92	.4937	17	-2	-6
	L	0.00	0.00	0	43.62	44.25	92	.4809	12		
	D	0.00	0.00	0	.12	.37	3	-.0262	-2	-1	0
	D	0.00	0.00	0	.12	.12	0	-.0128	-5		
13	R	0.00	-.25	180	42.37	42.62	94	.5218	10	-1	-3
	R	0.00	-.25	180	42.37	42.87	92	.4883	10		
30	L	0.00	0.00	0	41.75	42.50	100	.6540	9	-1	-4
	L	0.00	0.00	0	42.00	42.50	95	.5935	10		
	D	0.00	0.00	0	0.00	.25	2	-.0335	0	0	-1
	D	0.00	0.00	0	-.25	0.00	5	-.0605	1		
14	R	.25	-.25	180	43.00	44.00	88	.5353	11	0	-2
	R	.25	-.25	180	42.75	44.50	86	.5135	11		
22	L	0.00	-.75	15	43.00	44.75	84	.5119	11	0	-5
	L	0.00	-.75	15	43.00	44.62	82	.4983	10		
	D	0.00	0.00	0	-.25	.50	2	-.0218	0	0	-3
	D	0.00	0.00	0	0.00	.12	2	-.0136	-1		
15	R	-.25	-.25	102	43.00	42.87	90	.5024	14	1	-2
	R	-.25	-.50	105	43.00	42.87	90	.4814	14		
30	L	0.00	-.75	90	43.50	43.00	90	.5057	13	1	-2
	L	0.00	-.75	90	43.37	42.87	90	.4829	13		
	D	0.00	-.25	3	0.00	0.00	0	-.0210	0	0	0
	D	0.00	0.00	0	-.12	-.12	0	-.0228	0		
16	R	-.25	0.00	0	42.75	44.87	78	.4916	7	0	-3
	R	-.50	0.00	0	43.00	44.75	88	.4842	7		
23	L	-.25	0.00	0	42.75	43.50	90	.4923	9	0	-8
	L	-.25	0.00	0	42.62	43.62	90	.4719	8		
	D	-.25	0.00	0	.25	-.12	10	-.0074	0	0	-5
	D	0.00	0.00	0	.12	.12	0	-.0204	-1		

SECOND TRIMESTER

PT	GRAD ACA	#11	#9	#10	#17A	#17B	#16A	#16B	NRA + -PRA	WT LB	GRAV PARA
9	3	6/ 1	8/ 12/ 4		16/ 20/ 8		16/ 18/ 0		6.25	157	4/3
	2	4/ 3	10/ 16/ 4		16/ 16/ 8		18/ 18/ 0		5.25	168	4/3
D	-1	-2/ 2	2/ 4/ 0		0/ -4/ 0		2/ 0/ 0		-1.00	11	0/0
10	1	6/ 4	6/ 12/ 8		12/ 20/ 12		20/ 20/ 6		5.75	125	3/2
	2	8/ 4	14/ 14/ 8		16/ 24/ 6		10/ 10/ 2		5.25	135	3/2
D	1	2/ 0	8/ 2/ 0		4/ 4/ -6		-10/ -10/ -4		-.50	10	0/0
11	4	8/ 7	4/ 12/ 6		22/ 24/ 20		12/ 12/ 4		8.25	209	2/1
	4	8/ 7	8/ 8/ 4		20/ 24/ 20		12/ 12/ 8		9.25	210	2/1
D	0	0/ 0	4/ -4/ -2		-2/ 0/ 0		0/ 0/ 4		1.00	1	0/0
12	3	8/ 6	12/ 16/ 6		28/ 28/ 16		4/ 4/-14		4.50	129	1/0
	3	9/ 7	12/ 16/ 12		24/ 26/ 22		8/ 8/ -4		6.25	140	1/0
D	0	1/ 1	0/ 0/ 6		-4/ 2/ 6		4/ 4/ 10		1.75	11	0/0
13	2	6/ 4	4/ 12/ 4		16/ 28/ 12		10/ 18/ 10		4.50	185	2/1
	2	9/ 3	8/ 12/ 10		16/ 30/ 12		12/ 20/ 12		5.00	206	2/1
D	0	3/ -1	4/ 0/ 6		0/ 2/ 0		2/ 2/ 2		.50	21	0/0
14	3	9/ 7	8/ 16/ 8		8/ 26/ 12		16/ 16/ 8		4.25	136	2/1
	2	9/ 3	8/ 16/ 8		12/ 22/ 16		20/ 20/ 8		4.50	146	2/1
D	-1	0/ -4	0/ 0/ 0		4/ -4/ 4		4/ 4/ 0		.25	10	0/0
15	3	9/ 4	6/ 24/ 6		16/ 18/ 16		18/ 18/ 8		5.00	159	5/2
	3	7/ 4	6/ 20/ 6		16/ 18/ 12		12/ 12/ 19		5.00	175	5/2
D	0	-2/ 0	0/ -4/ 0		0/ 0/ -4		-6/ -6/ 10		0.00	16	0/0
16	1	6/ 5	12/ 12/ 8		12/ 20/ 12		16/ 20/ 8		7.75	112	2/1
	2	6/ 2	6/ 12/ 8		14/ 22/ 18		12/ 12/ 6		7.50	112	2/1
D	1	0/ -3	-6/ 0/ 0		2/ 2/ 6		-4/ -8/ -2		-.25	0	0/0

SECOND TRIMESTER

PT # AGE		SPH	CYL	AX	K HOR	K VERT	K AX VERT	C TH	IOP	# 8	#13B
17	R	0.00	0.00	0	41.37	42.00	92	.5137	12	0	-4
	R	0.00	0.00	0	41.62	42.12	90	.4896	13		
34	L	0.00	0.00	0	41.37	42.50	120	.5121	15	0	-5
	L	0.00	0.00	0	41.50	42.75	115	.5085	16		
	D	0.00	0.00	0	.25	.12	2	-.0241	1	0	-1
	D	0.00	0.00	0	.12	.25	5	-.0036	1		
18	R	0.00	0.00	0	41.50	42.50	130	.5167	13	3	1
	R	0.00	0.00	0	41.50	42.87	130	.4878	14		
28	L	-.25	0.00	0	41.25	43.25	60	.5053	13	3	-4
	L	0.00	0.00	0	41.00	43.00	63	.4830	14		
	D	0.00	0.00	0	0.00	.37	0	-.0289	1	0	-3
	D	.25	0.00	0	-.25	-.25	3	-.0223	1		
19	R	-2.00	0.00	0	45.00	45.50	86	.5133	10	0	1
	R	-2.00	0.00	0	45.37	45.87	88	.4919	11		
23	L	-1.75	-.50	45	45.37	45.62	65	.5185	11	0	1
	L	-1.75	-.50	60	45.62	46.12	70	.4899	15		
	D	0.00	0.00	0	.37	.37	2	-.0214	1	0	0
	D	0.00	0.00	15	.25	.50	5	-.0286	4		
20	R	-2.25	-.25	30	41.75	42.87	90	.4921	12	0	-2
	R	-2.25	-.50	25	41.75	43.12	88	.4837	16		
23	L	-2.25	-.50	165	41.75	43.12	85	.5327	12	0	-2
	L	-2.25	-.25	165	42.12	43.12	88	.5231	16		
	D	0.00	-.25	5	0.00	.25	2	-.0084	4	0	0
	D	0.00	-.25	0	.37	0.00	3	-.0096	4		
21	R	-.25	-.25	180	45.00	46.50	88	.5204	18	1	-1
	R	-.25	-.25	180	45.00	46.37	87	.5026	17		
27	L	-.75	0.00	0	45.25	46.75	88	.4826	19	1	-1
	L	-.75	0.00	0	45.12	46.50	85	.4803	17		
	D	0.00	0.00	0	0.00	-.12	1	-.0178	-1	0	0
	D	0.00	0.00	0	-.12	-.25	3	-.0023	-2		
22	R	0.00	0.00	0	42.50	43.00	90	.5013	8	-4	-2
	R	.25	0.00	0	42.25	42.75	90	.4871	12		
24	L	0.00	0.00	0	42.25	42.75	90	.5254	9	-6	-5
	L	0.00	0.00	0	42.12	43.87	90	.5038	9		
	D	.25	0.00	0	-.25	-.25	0	-.0142	4	-2	-3
	D	0.00	0.00	0	-.12	1.12	0	-.0216	0		
23	R	-.25	-.25	180	46.87	47.12	90	.4940	14	-2	-4
	R	-.25	-.25	180	46.50	47.00	90	.4826	14		
19	L	0.00	0.00	0	46.62	47.00	88	.4956	14	-2	-4
	L	0.00	0.00	0	46.75	47.25	86	.4839	14		
	D	0.00	0.00	0	-.37	-.12	0	-.0114	0	0	0
	D	0.00	0.00	0	.12	.25	2	-.0117	0		
24	R	0.00	-.25	90	43.75	44.75	92	.5472	16	-1	-4
	R	0.00	-.25	83	44.00	44.87	87	.5342	17		
22	L	0.00	-.25	90	44.75	45.12	80	.5063	19	-1	-4
	L	0.00	-.25	90	44.75	45.00	85	.4819	18		
	D	0.00	0.00	7	.25	.12	5	-.0130	1	0	0
	D	0.00	0.00	0	0.00	-.12	5	-.0244	-1		

SECOND TRIMESTER

PT	GRAD ACA	#11	#9	#10	#17A	#17B	#16A	#16B	NRA + -PRA	WT LB	GRAV PARA
17	4	7/ 6	14/ 14/ 12		10/ 24/ 16		12/ 18/ 12		9.00	136	2/0
	3	7/ 6	16/ 16/ 14		16/ 24/ 16		10/ 14/ 8		8.50	144	2/0
D	-1	0/ 0	2/ 2/ 2		6/ 0/ 0		-2/ -4/ -4		-.50	8	0/0
18	4	4/ 1	28/ 28/ 16		8/ 8/ 0		20/ 20/ 4		7.00	145	5/4
	4	4/ 0	24/ 24/ 16		8/ 10/ 4		16/ 16/ 8		7.00	151	5/4
D	0	0/ -1	-4/ -4/ 0		0/ 2/ 4		-4/ -4/ 4		0.00	6	0/0
19	2	9/ 6	16/ 16/ 12		16/ 20/ 12		20/ 20/ 6		5.00	148	1/0
	2	8/ 6	14/ 14/ 10		14/ 20/ 10		16/ 16/ 4		5.00	160	1/0
D	0	-1/ 0	-2/ -2/ -2		-2/ 0/ -2		-4/ -4/ -2		0.00	12	0/0
20	2	4/ 3	6/ 6/ 4		14/ 24/ 16		20/ 20/ 4		5.25	160	4/3
	3	9/ 7	12/ 16/ 12		24/ 26/ 22		8/ 8/ -4		5.00	168	4/3
D	1	5/ 4	6/ 10/ 8		10/ 2/ 6		-12/ 12/ -8		-.25	8	0/0
21	4	8/ 6	6/ 8/ 2		12/ 16/ 18		8/ 10/ 4		5.75	150	1/0
	4	8/ 6	6/ 8/ 4		12/ 16/ 10		8/ 10/ 6		5.75	177	1/0
D	0	0/ 0	0/ 0/ 2		0/ 0/ -8		0/ 0/ 2		0.00	27	0/0
22	2	5/ 2	8/ 16/ 10		14/ 20/ 8		8/ 10/ 0		6.75	152	3/1
	3	6/ 5	12/ 18/ 14		16/ 20/ 12		10/ 12/ 2		7.25	154	3/1
D	1	1/ 3	4/ 2/ 4		2/ 0/ 4		2/ 2/ 2		.50	2	0/0
23	4	5/ 4	6/ 14/ 8		20/ 24/ 12		16/ 16/ 4		6.50	168	1/0
	4	6/ 4	6/ 16/ 8		18/ 22/ 10		16/ 16/ 2		6.00	172	1/0
D	0	1/ 0	0/ 2/ 0		-2/ -2/ -2		0/ 0/ -2		.50	4	0/0
24	3	9/ 5	8/ 8/ 4		12/ 16/ 10		10/ 10/ 0		5.25	127	2/0
	3	8/ 4	10/ 10/ 4		12/ 16/ 10		10/ 10/ 2		5.25	140	2/0
D	0	-1/ -1	2/ 2/ 0		0/ 0/ 0		0/ 0/ 2		0.00	13	0/0

SECOND TRIMESTER

PT # AGE		SPH	CYL	AX	K HOR	K VERT	K AX VERT	C TH	IOP	# 8	#13B
25	R	-.25	0.00	0	43.87	44.25	93	.5015	16	-1	-5
	R	-.25	0.00	0	44.00	44.12	90	.5851	16		
30	L	-.50	0.00	0	43.75	44.37	86	.5181	16	-1	-5
	L	-.50	0.00	0	44.00	44.25	90	.5032	16		
	D	0.00	0.00	0	.12	-.12	3	-.0164	0	0	0
	D	0.00	0.00	0	.25	-.12	4	-.0149	0		
26	R	-.25	0.00	0	42.50	43.75	90	.5116	13	2	-1
	R	0.00	0.00	0	42.00	43.25	86	.4924	14		
24	L	0.00	0.00	0	43.00	43.50	90	.5007	14	2	-1
	L	0.00	0.00	0	43.00	43.62	88	.4813	13		
	D	.25	0.00	0	-.50	-.50	4	-.0192	1	0	0
	D	0.00	0.00	0	0.00	.12	2	-.0194	-1		
27	R	1.00	-2.00	3	42.00	44.50	90	.5027	14	3	-1
	R	1.00	-2.00	10	42.00	44.37	88	.4879	15		
22	L	1.25	-2.25	170	42.25	45.00	82	.5077	16	3	-1
	L	1.25	-2.00	170	42.25	45.00	85	.4853	15		
	D	0.00	0.00	7	0.00	-.12	2	-.0148	1	0	0
	D	0.00	.25	0	0.00	0.00	3	-.0224	-1		
28	R	-2.25	0.00	0	44.00	45.25	87	.5127	12	0	-4
	R	-2.75	0.00	0	44.00	45.12	90	.4927	12		
22	L	-2.00	0.00	0	44.00	45.00	85	.5028	11	0	-5
	L	-2.25	0.00	0	44.25	45.00	88	.4842	11		
	D	.50	0.00	0	0.00	-.12	3	-.0203	0	0	-1
	D	.25	0.00	0	.25	0.00	3	-.0183	0		
29	R	-.50	0.00	0	44.50	44.50	80	.5067	16	1	-3
	R	-.50	0.00	0	44.37	44.62	85	.4852	15		
21	L	-.50	-.25	45	44.37	45.25	90	.5065	13	1	-3
	L	-.50	-.25	45	44.25	45.00	85	.4871	14		
	D	0.00	0.00	0	-.12	.12	5	-.0215	-1	0	0
	D	0.00	0.00	0	.12	-.25	5	-.0194	1		
30	R	.50	0.00	0	44.87	45.50	90	.5026	9	2	2
	R	.50	0.00	0	44.75	45.37	90	.4853	11		
21	L	0.00	-.25	180	44.50	45.12	90	.5055	10	2	2
	L	0.00	-.25	180	44.25	45.25	90	.4860	11		
	D	0.00	0.00	0	-.12	-.12	0	-.0173	2	0	0
	D	0.00	0.00	0	-.25	.12	0	-.0195	1		

SECOND TRIMESTER

PT	GRAD ACA	#11		#9	#10		#17A	#17B		#16A	#16B		NRA + -PRA	WT LB	GRAV PARA
25	3	8/	4	16/	24/	4	12/	18/	8	18/	18/	6	4.75	189	3/2
	4	6/	4	12/	20/	6	12/	20/	8	16/	16/	8	5.25	200	3/2
D	1	-2/	0	-4/	-4/	2	0/	2/	0	-2/	-2/	2	.50	11	0/0
26	2	7/	6	8/	10/	6	12/	20/	8	14/	16/	8	5.75	161	1/0
	2	7/	3	8/	10/	6	18/	18/	10	12/	16/	10	5.75	178	1/0
D	0	0/	-3	0/	0/	0	6/	-2/	2	-2/	0/	2	0.00	17	0/0
27	2	5/	1	28/	28/	8	16/	20/	8	14/	28/	8	6.75	200	1/0
	3	6/	4	20/	20/	10	12/	16/	8	12/	24/	10	6.75	218	1/0
D	1	1/	3	-8/	-8/	2	-4/	-4/	0	-2/	-4/	2	0.00	18	0/0
28	4	7/	4	16/	16/	14	16/	16/	8	18/	18/	8	6.00	135	2/1
	5	7/	4	14/	14/	12	18/	18/	10	18/	18/	8	5.50	141	2/1
D	1	0/	0	2/	2/	-2	2/	2/	2	0/	0/	0	-.50	6	0/0
29	4	7/	4	8/	12/	4	8/	10/	7	8/	8/	0	5.00	129	1/0
	3	7/	4	8/	12/	8	8/	10/	6	10/	10/	4	5.50	135	1/0
D	-1	0/	0	0/	0/	4	0/	0/	-1	2/	2/	4	.50	6	0/0
30	4	6/	5	16/	28/	14	16/	16/	10	24/	24/	10	8.00	125	2/1
	3	8/	6	12/	24/	12	18/	18/	12	22/	22/	10	7.50	133	2/1
D	-1	2/	1	-4/	-4/	-2	2/	2/	2	-2/	-2/	0	-.50	8	0/0

THIRD TRIMESTER

PT # / AGE		SPH	CYL	AX	K HOR	K VERT	K AX VERT	C TH	IOP	# 8	#13
1	R	.25	0.00	0	40.00	41.00	70	.4949	12	0	-1
	R	.25	0.00	0	40.00	41.00	75	.5600	11		
24	L	.25	0.00	0	40.00	41.12	85	.4861	12	0	-1
	L	.50	0.00	0	39.75	41.00	85	.5089	10		
	D	0.00	0.00	0	0.00	0.00	5	.0651	-1	0	0
	D	.25	0.00	0	-.25	-.12	0	.0228	-2		
2	R	.50	0.00	0	42.00	44.25	90	.5497	11	1	-1
	R	.25	0.00	0	42.00	43.50	90	.4839	10		
32	L	.25	0.00	0	42.25	43.50	90	.4831	12	1	-1
	L	.25	0.00	0	42.12	43.87	90	.5561	11		
	D	-.25	0.00	0	0.00	-.75	0	.0658	-1	0	0
	D	0.00	0.00	0	-.12	.37	0	.0730	-1		
3	R	-3.00	-.50	10	44.00	45.00	87	.4821	9	0	-2
	R	-3.00	-.75	15	43.75	44.87	85	.5366	10		
33	L	-2.75	-.75	15	44.00	45.50	85	.4863	10	0	-2
	L	-2.75	-1.00	15	43.87	44.87	87	.5830	11		
	D	0.00	-.25	5	-.25	-.12	2	.0545	1	0	0
	D	0.00	-.25	0	-.12	-.62	2	.0967	1		
4	R	-.25	-1.25	180	43.50	45.50	87	.4838	7	-2	0
	R	0.00	-1.50	180	43.87	45.75	85	.4830	8		
30	L	0.00	-1.50	5	44.12	46.00	87	.4791	6	0	-2
	L	0.00	-1.50	5	44.50	46.50	87	.4714	9		
	D	.25	-.25	0	.37	.25	2	-.0008	1	2	-2
	D	0.00	0.00	0	.37	.50	0	-.0077	3		
5	R	-.75	-.50	105	42.75	42.50	95	.4808	14	0	0
	R	-1.00	-.50	100	42.37	42.37	90	.5769	16		
21	L	-.75	-.75	95	43.12	42.62	100	.4881	16	0	0
	L	-.75	-.75	90	43.00	43.00	90	.4921	17		
	D	-.25	0.00	5	-.37	-.12	5	.0961	2	0	0
	D	0.00	0.00	5	-.12	-.37	10	.0040	1		
6	R	0.00	-.25	180	42.87	43.50	90	.5526	9	1	-2
	R	0.00	-.50	0	43.00	44.00	90	.4895	10		
25	L	0.00	0.00	180	42.75	43.62	90	.5536	10	1	-2
	L	0.00	-.25	180	43.00	44.00	90	.4833	9		
	D	0.00	-.25	0	.12	.50	0	-.0631	1	0	0
	D	0.00	-.25	0	.25	.37	0	-.0703	-1		
7	R	-.25	-.25	95	43.12	42.87	90	.5175	11	-1	-5
	R	-.25	-.50	95	43.25	43.50	90	.4861	10		
35	L	-.50	-.25	67	43.00	42.87	90	.5299	11	-1	-3
	L	-.50	-.50	67	43.25	43.50	90	.4863	11		
	D	0.00	-.25	0	.12	.62	0	-.0314	-1	0	2
	D	0.00	-.25	0	.25	.62	0	-.0436	0		
8	R	-2.00	-.75	15	41.75	43.12	85	.5321	14	5	4
	R	-2.00	-.25	15	42.00	43.25	85	.4841	14		
29	L	-2.75	-.25	180	42.12	42.75	85	.5457	12	5	1
	L	-2.75	-.25	15	42.00	43.00	90	.4844	13		
	D	0.00	.50	0	.25	.12	0	-.0480	0	0	-3
	D	0.00	0.00	15	-.12	.25	5	-.0513	1		

THIRD TRIMESTER

PT	GRAD ACA	#11		#9	#10		#17A	#17B		#16A	#16B		NRA + -PRA	GRAV PARA		WT LB
1	5	6/	4	6/	6/	3	14/	18/	12	14/	14/	-3	5.00	8/	7	196
	5	6/	4	6/	6/	4	18/	18/	14	16/	16/	0	4.50	8/	8	180
D	0	0/	0	0/	0/	1	4/	0/	2	2/	2/	3	-.50	0/	1	-16
2	3	6/	4	10/	16/	14	18/	20/	14	16/	18/	4	5.25	2/	1	180
	3	6/	4	10/	16/	14	16/	18/	12	15/	17/	6	5.50	2/	2	160
D	0	0/	0	0/	0/	0	-2/	-2/	-2	-1/	-1/	2	.25	0/	1	-20
3	3	9/	5	16/	18/	16	16/	22/	14	24/	24/	6	7.00	1/	0	154
	2	7/	4	16/	18/	14	18/	24/	18	18/	18/	6	7.00	1/	1	147
D	-1	-2/	-1	0/	0/	-2	-2/	2/	4	-6/	-6/	0	0.00	0/	1	-7
4	3	8/	3	12/	12/	8	12/	15/	4	10/	10/	0	6.00	5/	4	138
	3	8/	6	12/	12/	8	10/	10/	0	12/	12/	8	4.50	5/	5	118
D	0	0/	3	0/	0/	0	-2/	-5/	-4	2/	2/	8	-1.50	0/	1	-20
5	1	9/	8	12/	12/	10	16/	24/	18	16/	18/	8	9.25	1/	0	134
	2	9/	8	10/	10/	4	18/	20/	12	12/	12/	2	8.00	1/	0	149
D	-1	0/	0	-2/	-2/	-6	2/	-4/	-6	-4/	-6/	-6	-1.25	0/	0	15
6	4	6/	7	14/	18/	12	18/	28/	20	14/	14/	8	7.25	2/	1	150
	3	7/	5	12/	18/	16	20/	22/	18	14/	14/	8	6.25	2/	2	149
D	-1	1/	-2	-2/	0/	4	2/	-6/	-2	0/	0/	0	-1.00	0/	1	-1
7	2	10/	6	15/	16/	12	20/	26/	16	12/	12/	1	6.00	4/	3	168
	2	7/	4	12/	12/	8	20/	24/	20	18/	18/	0	5.75	4/	4	125
D	0	-3/	-2	-3/	-4/	-4	0/	-2/	4	6/	6/	-1	-.25	0/	1	-43
8	3	3/	1	11/	11/	4	5/	5/	2	16/	16/	6	5.50	1/	0	150
	2	3/	0	10/	10/	8	10/	10/	6	12/	12/	6	5.50	1/	1	125
D	-1	0/	-1	-1/	-1/	4	5/	5/	4	-4/	-4/	0	0.00	0/	1	-25

THIRD TRIMESTER

PT # AGE		SPH	CYL	AX	K HOR	K VERT	K AX VERT	C TH	IOP	# 8	#13B
9	R	-8.75	0.00	0	44.50	45.00	95	.4830	11	0	1
	R	-8.75	-.75	0	45.50	44.50	95	.5190	13		
27	L	-8.50	-.75	60	44.62	45.25	88	.5560	12	0	0
	L	-8.50	0.00	65	44.75	45.37	90	.4900	13		
	D	0.00	-.75	0	1.00	-.50	0	.0360	2	0	-1
	D	0.00	.75	5	.12	.12	2	-.0660	1		
10	R	-.25	0.00	0	44.50	44.75	108	.4823	13	0	0
	R	-.25	0.00	0	44.00	44.50	85	.4931	13		
25	L	0.00	0.00	0	44.25	45.25	90	.5599	12	0	2
	L	0.00	0.00	0	44.25	45.37	88	.4895	13		
	D	0.00	0.00	0	-.50	-.25	23	.0108	0	0	2
	D	0.00	0.00	0	0.00	.12	2	-.0704	1		
11	R	-2.00	-.25	110	44.00	44.00	90	.5340	12	2	0
	R	-2.00	-.25	110	44.25	44.25	90	.4845	12		
25	L	-2.25	-.50	170	44.00	45.00	90	.5680	14	0	-1
	L	-2.25	-.50	170	43.87	45.50	90	.4867	14		
	D	0.00	0.00	0	.25	.25	0	-.0495	0	-2	-1
	D	0.00	0.00	0	-.12	.50	0	-.0813	0		
12	R	-5.75	-2.50	10	44.12	46.50	90	.5096	11	0	3
	R	-5.50	-2.25	5	44.00	46.87	80	.4846	12		
23	L	-6.75	-1.50	175	44.50	46.00	90	.4957	11	0	1
	L	-6.50	-1.50	177	44.50	46.37	90	.4804	11		
	D	.25	.25	5	-.12	.37	10	-.0250	1	0	-2
	D	.25	0.00	2	0.00	.37	0	-.0153	0		
13	R	-1.25	-.50	175	41.00	42.12	75	.5996	14	2	2
	R	-1.25	-.75	170	41.00	42.12	70	.5420	14		
28	L	-1.25	-.50	5	41.12	41.75	87	.5854	13	2	3
	L	-1.00	-.75	180	41.12	42.25	92	.5117	14		
	D	0.00	-.25	5	0.00	0.00	5	-.0576	0	0	1
	D	.25	-.25	5	0.00	-.50	5	-.0737	1		
14	R	-.25	0.00	0	42.50	42.62	90	.4882	14	-2	-11
	R	-.25	0.00	0	42.50	42.75	85	.5523	14		
28	L	-.25	0.00	0	42.25	43.00	90	.4920	11	-2	-12
	L	-.25	0.00	0	42.50	43.12	88	.4875	13		
	D	0.00	0.00	0	0.00	.12	5	.0641	0	0	-1
	D	0.00	0.00	0	.25	.12	2	-.0045	2		
15	R	-3.25	0.00	0	42.50	42.50	90	.5239	12	-1	-1
	R	-3.00	0.00	0	42.50	42.37	90	.5179	11		
27	L	-2.50	0.00	0	42.62	42.62	90	.5603	11	1	0
	L	-2.75	0.00	0	42.50	42.50	90	.5221	12		
	D	.25	0.00	0	0.00	-.12	0	-.0060	-1	2	1
	D	-.25	0.00	0	-.12	-.12	0	-.0382	1		
16	R	-.75	-.50	90	45.87	46.12	100	.5001	14	-1	-1
	R	-.75	-.50	100	45.50	45.75	115	.4822	13		
23	L	-.75	-.50	105	46.75	46.00	100	.5147	12	0	0
	L	-.75	-.50	100	46.75	46.50	105	.4829	13		
	D	0.00	0.00	10	-.37	.37	15	-.0179	-1	1	1
	D	0.00	0.00	5	0.00	.50	5	-.0318	1		

THIRD TRIMESTER

PT	GRAD ACA	#11	#9	#10	#17A	#17B	#16A	#16B	NRA + -PRA	GRAV PARA	WT LB
9	1	10/ 5	18/	30/ 20	14/	24/ 20	24/	24/ 14	6.50	1/ 0	130
	2	12/ 8	24/	30/ 12	16/	16/ 12	24/	24/ 12	7.50	1/ 1	110
D	1	2/ 3	6/	0/ -8	2/	-8/ -8	0/	0/ -2	1.00	0/ 1	-20
10	0	5/ 3	6/	6/ 4	8/	8/ 4	12/	12/ 4	4.25	1/ 0	138
	4	5/ 4	4/	8/ 4	12/	14/ 12	14/	14/ 6	5.75	1/ 1	140
D	4	0/ 1	-2/	2/ 0	4/	6/ 8	2/	2/ 2	1.50	0/ 1	2
11	2	8/ 6	4/	4/ 6	16/	16/ 12	6/	12/ 6	7.50	2/ 1	160
	2	8/ 6	4/	4/ 6	16/	18/ 12	6/	12/ 6	7.50	2/ 2	152
D	0	0/ 0	0/	0/ 0	0/	2/ 0	0/	0/ 0	0.00	0/ 1	-8
12	4	10/ 7	18/	30/ 24	20/	24/ 18	24/	24/ 12	6.50	2/ 1	248
	3	8/ 7	10/	20/ 14	24/	24/ 12	24/	24/ 12	6.00	2/ 2	210
D	-1	-2/ 0	-8/	-10/-10	4/	0/ -6	0/	0/ 0	-.50	0/ 1	-38
13	5	9/ 4	18/	22/ 18	20/	24/ 16	24/	24/ 7	5.00	3/ 2	190
	4	10/ 7	18/	30/ 24	18/	20/ 10	30/	30/ 12	7.00	3/ 3	173
D	-1	1/ 3	0/	8/ 6	-2/	-4/ -6	6/	6/ 5	2.00	0/ 1	-17
14	4	8/ 6	8/	8/ 6	17/	20/ 8	14/	14/ -3	4.50	5/ 4	159
	3	7/ 4	6/	6/ 0	12/	24/ 20	10/	10/ -9	5.75	5/ 4	159
D	-1	-1/ -2	-2/	-2/ -6	-5/	4/ 12	-4/	-4/ -6	1.25	0/ 0	0
15	2	8/ 0	18/	22/ 14	10/	14/ 12	18/	18/ 4	6.75	4/ 3	198
	2	8/ 4	14/	14/ 10	8/	10/ 6	20/	20/ 10	5.25	4/ 3	182
D	0	0/ 4	-4/	-8/ -4	-2/	-4/ -6	2/	2/ 6	-1.50	0/ 0	-16
16	3	8/ 5	12/	18/ 6	16/	18/ 16	20/	20/ 8	6.75	1/ 0	150
	2	6/ 4	24/	24/ 16	16/	24/ 12	28/	28/ 12	9.50	1/ 1	135
D	-1	-2/ -1	12/	6/ 10	0/	6/ -4	8/	8/ 4	2.75	0/ 1	-15

THIRD TRIMESTER

PT # AGE		SPH	CYL	AX	K HOR	K VERT	K AX VERT	C TH	IOP	# 8	#13
17	R	-3.50	0.00	0	42.12	42.87	90	.5017	13	0	-4
	R	-3.50	0.00	0	42.12	42.75	85	.4802	12		
34	L	-3.25	0.00	0	42.12	43.00	90	.4815	13	0	-3
	L	-3.25	0.00	0	41.87	42.75	90	.5101	12		
	D	0.00	0.00	0	0.00	-.12	5	-.0215	-1	0	1
	D	0.00	0.00	0	-.25	-.25	0	.0286	-1		
18	R	0.00	-.50	30	43.12	44.00	90	.5685	11	-1	0
	R	0.00	-.25	45	43.00	44.00	95	.6520	11		
31	L	-.50	0.00	0	43.12	43.62	90	.5863	13	-1	-3
	L	-.25	0.00	0	43.00	44.00	93	.6715	11		
	D	0.00	.25	15	-.12	0.00	5	.0835	0	0	-3
	D	.25	0.00	0	-.12	.37	3	.0852	-2		
19	R	-.25	0.00	0	45.62	46.12	90	.4907	11	-1	-4
	R	-.25	0.00	0	45.50	46.25	90	.4941	10		
33	L	-.25	0.00	0	46.00	46.75	90	.4871	9	-1	-2
	L	-.25	0.00	0	46.25	46.75	90	.5112	9		
	D	0.00	0.00	0	-.12	.12	0	.0034	-1	0	2
	D	0.00	0.00	0	.25	0.00	0	.0241	0		
20	R	0.00	0.00	0	42.25	42.75	88	.4942	6	-1	-8
	R	0.00	0.00	0	42.25	42.75	90	.4714	6		
32	L	0.00	0.00	0	42.50	43.00	87	.5102	7	-2	-7
	L	0.00	0.00	0	42.50	43.00	85	.5130	8		
	D	0.00	0.00	0	0.00	0.00	2	-.0228	0	-1	1
	D	0.00	0.00	0	0.00	0.00	2	-.0028	1		
21	R	-1.00	0.00	0	46.00	45.87	90	.5023	16	0	-4
	R	-1.00	0.00	0	45.87	46.00	90	.4879	16		
24	L	-.75	-.50	90	45.50	45.62	90	.5262	16	0	-4
	L	-.75	-.50	90	45.50	45.62	90	.5112	16		
	D	0.00	0.00	0	-.12	.12	0	-.0144	0	0	0
	D	0.00	0.00	0	0.00	0.00	0	-.0150	0		
22	R	1.75	-.50	180	44.00	45.37	88	.4900	17	0	-6
	R	1.75	-.50	180	44.00	45.50	90	.4853	17		
25	L	.50	-.50	5	44.12	45.37	90	.5107	17	0	-6
	L	.50	-.50	5	44.00	45.50	92	.4862	17		
	D	0.00	0.00	0	0.00	.12	2	-.0047	0	0	0
	D	0.00	0.00	0	-.12	.12	2	-.0245	0		
23	R	-1.25	-.25	90	45.00	44.50	85	.5132	13	2	3
	R	-1.25	-.25	90	44.87	44.62	90	.4923	14		
25	L	-.50	-.25	75	45.00	44.50	75	.4937	16	2	3
	L	-.50	-.25	75	45.00	44.75	80	.5166	17		
	D	0.00	0.00	0	-.12	.12	5	-.0209	1	0	0
	D	0.00	0.00	0	0.00	.25	5	.0229	1		
24	R	0.00	0.00	0	43.62	42.62	94	.5305	15	-1	-3
	R	0.00	0.00	0	43.50	42.75	90	.5087	16		
30	L	0.00	0.00	0	43.25	43.75	95	.5070	16	-1	-3
	L	0.00	0.00	0	43.25	43.75	92	.4820	15		
	D	0.00	0.00	0	-.12	.12	4	-.0250	1	0	0
	D	0.00	0.00	0	0.00	0.00	3	-.0250	-1		

				THIRD TRIMESTER								
PT	GRAD ACA	#11	#9	#10	#17A	#17B	#16A	#16B	NRA + -PRA	GRAV PARA	WT LB
17	1	9/ 6	24/	30/ 12	20/	24/ 18	16/	16/ 4	6.50	5/ 4	186
	1	7/ 5	24/	32/ 16	16/	28/ 10	10/	14/ 10	6.75	5/ 5	181
D	0	-2/ -1	0/	2/ 4	-4/	4/ -8	-6/	-2/ 6	.25	0/ 1	-5
18	4	7/ 3	6/	12/ 6	16/	16/ 8	16/	16/ 8	4.00	5/ 4	165
	2	6/ 4	10/	10/ 8	16/	20/ 14	8/	10/ 4	5.50	5/ 5	135
D	-2	-1/ 1	4/	-2/ 2	0/	4/ 6	-8/	-6/ -4	1.50	0/ 1	-30
19	4	6/ 5	8/	8/ 3	24/	28/ 20	18/	18/ 14	9.75	3/ 1	182
	4	7/ 4	10/	10/ 8	20/	24/ 14	24/	24/ 12	9.75	3/ 2	160
D	0	1/ -1	2/	2/ 5	-4/	-4/ -6	6/	6/ -2	0.00	0/ 1	-22
20	3	8/ 6	10/	12/ 4	18/	22/ 14	14/	20/ 2	5.50	1/ 0	142
	2	8/ 6	12/	12/ 8	14/	20/ 10	12/	16/ 8	4.75	1/ 1	124
D	-1	0/ 0	2/	0/ 4	-4/	-2/ -4	-2/	-4/ 6	-.75	0/ 1	-18
21	4	9/ 7	14/	24/ 14	10/	20/ 8	12/	12/ 8	4.00	6/ 5	138
	5	7/ 5	10/	24/ 10	12/	20/ 12	12/	12/ 8	4.75	6/ 6	120
D	1	-2/ -2	-4/	0/ -4	2/	0/ 4	0/	0/ 0	.75	0/ 1	-18
22	4	7/ 3	10/	10/ 0	20/	20/ 8	10/	10/ -2	7.00	1/ 0	168
	4	6/ 4	12/	12/ 4	18/	18/ 8	10/	10/ 0	6.50	1/ 1	150
D	0	-1/ 1	2/	2/ 4	-2/	-2/ 0	0/	0/ 2	-.50	0/ 1	-18
23	2	8/ 5	26/	28/ 14	8/	14/ 10	16/	16/ 8	8.25	2/ 1	119
	3	8/ 5	20/	24/ 16	8/	16/ 8	18/	18/ 10	7.25	2/ 2	101
D	1	0/ 0	-6/	-4/ 2	0/	2/ -2	2/	2/ 2	-1.00	0/ 1	-18
24	2	8/ 7	8/	10/ 4	10/	16/ 8	12/	12/ 0	4.75	4/ 3	216
	3	7/ 5	10/	10/ 6	14/	14/ 10	12/	12/ 2	4.25	4/ 4	182
D	1	-1/ -2	2/	0/ 2	4/	-2/ 2	0/	0/ 2	-.50	0/ 1	-34

THIRD TRIMESTER

PT # AGE		SPH	CYL	AX	K HOR	K VERT	K AX VERT	C TH	IOP	# 8	#13
25	R	-.25	-.50	180	44.75	45.37	90	.5335	13	2	-4
	R	0.00	-.25	180	44.62	45.50	88	.5181	11		
17	L	0.00	-.25	170	44.37	45.00	87	.5262	11	2	-4
	L	0.00	-.25	175	44.50	45.00	90	.5027	12		
	D	.25	.25	0	-.12	.12	2	-.0154	-2	0	0
	D	0.00	0.00	5	.12	0.00	3	-.0235	1		
26	R	.25	-.50	170	43.50	43.87	92	.5056	17	0	-4
	R	.25	-.50	170	43.75	44.00	90	.4912	16		
17	L	0.00	0.00	0	43.50	44.25	95	.5051	17	0	-4
	L	0.00	0.00	0	43.50	44.37	90	.4883	16		
	D	0.00	0.00	0	.25	.12	2	-.0144	-1	0	0
	D	0.00	0.00	0	0.00	.12	5	-.0168	-1		
27	R	-2.50	-.50	135	43.50	44.25	90	.5108	12	2	-2
	R	-2.50	-.50	142	43.50	44.00	92	.4879	13		
32	L	-.50	-.50	135	43.25	44.00	90	.5089	12	2	-2
	L	-.75	-.25	135	43.25	44.12	92	.4835	13		
	D	0.00	0.00	7	0.00	-.25	2	-.0229	1	0	0
	D	-.25	.25	0	0.00	.12	2	-.0254	1		
28	R	-.25	0.00	0	44.00	45.50	88	.5127	12	-1	-8
	R	-.25	0.00	0	44.00	45.00	88	.4878	11		
25	L	0.00	0.00	0	44.00	45.75	90	.5051	10	-2	-7
	L	0.00	0.00	0	44.00	46.00	90	.4818	11		
	D	.25	0.00	0	0.00	-.50	0	-.0249	-1	-1	1
	D	0.00	0.00	0	0.00	.25	0	-.0233	1		
29	ZR	0.00	0.00	0	44.50	45.00	93	.4888	14	-2	-4
	R	0.00	0.00	0	44.00	45.00	90	.5170	14		
24	L	0.00	0.00	0	45.00	44.50	87	.5009	15	-2	-4
	L	0.00	0.00	0	45.00	44.00	89	.4812	14		
	D	0.00	0.00	0	-.50	0.00	3	.0282	0	0	0
	D	0.00	0.00	0	0.00	-.50	2	-.0197	-1		
30	R	-1.25	0.00	0	44.25	45.00	90	.5625	10	-1	-1
	R	-1.25	0.00	0	44.00	45.25	87	.5531	11		
29	L	-1.25	0.00	0	44.25	45.00	90	.5395	10	-1	-1
	L	-1.25	0.00	0	44.00	45.50	86	.5145	12		
	D	0.00	0.00	0	-.25	.25	3	-.0094	1	0	0
	D	0.00	0.00	0	-.25	.50	4	-.0250	2		
31	R	1.00	-.25	90	43.50	43.75	80	.5288	7	-2	-4
	R	1.00	-.50	90	43.25	43.50	90	.4977	9		
23	L	1.00	-1.00	90	43.12	44.00	80	.5200	8	-2	-4
	L	1.00	-1.00	90	43.00	43.75	85	.5032	10		
	D	0.00	-.25	0	-.25	-.25	10	.0311	2	0	0
	D	0.00	0.00	0	-.12	.25	5	-.0168	2		
32	R	0.00	0.00	0	45.25	45.50	95	.5177	14	-1	-3
	R	0.00	0.00	0	45.00	45.50	90	.4937	12		
22	L	0.00	0.00	0	44.87	45.12	103	.5058	13	-1	-3
	L	0.00	0.00	0	44.50	45.00	100	.4846	12		
	D	0.00	0.00	0	-.25	0.00	5	-.0240	-2	0	0
	D	0.00	0.00	0	-.37	-.12	3	-.0212	-1		

				THIRD TRIMESTER										
PT	GRAD ACA	#11		#9	#10		#17A	#17B		#16A	#16B		NRA + -PRA	GRAV PARA	WT LB
25	2	7/	4	16/	24/	18	20/	20/	18	10/	12/	12	8.25	2/ 0	183
	2	7/	4	16/	22/	18	18/	18/	14	12/	24/	12	7.50	2/ 1	165
D	0	0/	0	0/	-2/	0	-2/	-2/	-4	2/	12/	0	-.75	0/ 1	-18
26	5	5/	4	10/	10/	4	14/	18/	8	10/	10/	4	6.00	2/ 0	164
	5	6/	4	10/	10/	4	12/	16/	6	12/	14/	8	5.50	2/ 1	135
D	0	1/	0	0/	0/	0	-2/	-2/	-2	2/	4/	4	-.50	0/ 1	-29
27	4	8/	6	24/	28/	8	20/	26/	18	14/	14/	4	9.25	1/ 0	182
	6	6/	4	20/	24/	8	16/	24/	18	14/	14/	4	8.25	1/ 1	160
D	2	-2/	-2	-4/	-4/	0	-4/	-2/	0	0/	0/	0	-1.00	0/ 1	-22
28	3	7/	3	6/	20/	4	14/	18/	12	18/	20/	8	5.75	4/ 2	176
	3	8/	6	12/	12/	8	10/	14/	8	12/	16/	8	5.75	4/ 3	151
D	0	1/	3	6/	-8/	4	-4/	-4/	-4	-6/	-4/	0	0.00	0/ 1	-25
29	3	8/	4	14/	24/	4	14/	24/	8	14/	14/	2	6.25	3/ 0	142
	3	7/	5	10/	24/	10	12/	20/	12	12/	12/	8	6.25	3/ 1	123
D	0	-1/	1	-4/	0/	6	-2/	-4/	4	-2/	-2/	6	0.00	0/ 1	-19
30	4	7/	2	6/	16/	8	10/	20/	16	14/	14/	8	4.50	9/ 6	168
	4	8/	4	6/	16/	8	10/	20/	16	12/	16/	10	5.00	9/ 7	150
D	0	1/	2	0/	0/	0	0/	0/	0	-2/	2/	2	.50	0/ 1	-18
31	2	6/	0	14/	16/	4	14/	23/	10	20/	20/	4	4.75	1/ 0	119
	3	8/	4	14/	16/	10	14/	20/	10	18/	22/	6	5.25	1/ 1	101
D	1	2/	4	0/	0/	6	0/	-3/	0	-2/	2/	2	.50	0/ 1	-18
32	4	7/	4	8/	14/	6	16/	22/	14	14/	16/	4	7.50	5/ 1	135
	3	6/	4	10/	12/	6	14/	20/	12	12/	18/	8	7.00	5/ 2	120
D	-1	-1/	0	2/	-2/	0	-2/	-2/	-2	-2/	-2/	4	-.50	0/ 1	-15

APPENDIX C

t-tests

1. Spherical equivalent

GRP		N	MEAN	SD	DIFFERENCE	SIGNIFICANCE
CONTROL		76	-0.016	0.178		
1ST	(vs CON)	62	0.008	0.139	-0.025	.3819
2ND	(vs CON)	60	-0.017	0.145	0.001	.3532
3RD	(vs CON)	64	0.027	0.149	-0.044	.1170
2ND	(vs 1st)		-0.017	0.145	0.025	.3398
3RD	(vs 1st)		0.027	0.149	-0.019	.4605
3RD	(vs 2nd)		0.027	0.149	-0.044	.0936

2. Cylinder axis

GRP		N	MEAN	SD	DIFFERENCE	SIGNIFICANCE
CONTROL		76	1.342	4.203		
1ST	(vs CON)	62	1.758	4.601	-0.416	.5831
2ND	(vs CON)	60	0.833	2.519	0.509	.4146
3RD	(vs CON)	64	1.703	3.710	-0.361	.5952
2ND	(vs 1st)		0.833	2.519	0.925	.1697
3RD	(vs 1st)		1.703	3.710	0.055	.5258
3RD	(vs 2nd)		1.703	3.710	-0.870	.1279

3. Average corneal curvature

GRP		N	MEAN	SD	DIFFERENCE	SIGNIFICANCE
CONTROL		76	0.061	0.252		
1ST	(vs CON)	62	0.087	0.189	-0.026	.5124
2ND	(vs CON)	60	0.030	0.259	0.031	.4948
3RD	(vs CON)	64	0.025	0.211	0.035	.3769
2ND	(vs 1st)		0.030	0.259	0.056	.1673
3RD	(vs 1st)		0.025	0.211	0.061	.0850
3RD	(vs 2nd)		0.025	0.211	0.005	.5891

4. K axis

GRP		N	MEAN	SD	DIFFERENCE	SIGNIFICANCE
CONTROL		76	3.316	3.634		
1ST	(vs CON)	62	3.806	3.172	-0.491	.4101
2ND	(vs CON)	60	3.083	2.676	0.232	.6577
3RD	(vs CON)	64	3.031	3.908	0.285	.6433
2ND	(vs 1st)		3.083	2.676	0.723	.1734
3RD	(vs 1st)		3.031	3.908	0.775	.2224
3RD	(vs 2nd)		3.031	3.908	0.052	.5472

t-tests

5. CORNEAL THICKNESS

GRP	SAMPLE	N	MEAN	SD	DIFFERENCE	SIGNIFICANCE
CONTROL		76	-0.015	0.040		
1ST	(vs CON)	62	-0.006	0.025	-0.009	.1028
2ND	(vs CON)	60	-0.014	0.030	-0.001	.6596
3RD	(vs CON)	64	-0.008	0.042	-0.007	.3066
2ND	(vs 1st)		-0.014	0.030	0.008	.6760
3RD	(vs 1st)		-0.008	0.042	0.002	.6760
3RD	(vs 2nd)		-0.008	0.042	-0.006	.3743

6. GRADIENT ACA

GRP	SAMPLE	N	MEAN	SD	DIFFERENCE	SIGNIFICANCE
CONTROL		38	-0.158	1.151		
1ST	(vs CON)	31	0.226	0.920	-0.384	.1336
2ND	(vs CON)	30	0.233	1.006	-0.391	.1428
3RD	(vs CON)	32	-0.031	1.121	-0.127	.6347
2ND	(vs 1st)		0.233	1.006	-0.008	.4283
3RD	(vs 1st)		-0.031	1.121	0.257	.3261
3RD	(vs 2nd)		-0.031	1.121	0.265	.3349

7. ACCOMMODATION (POSITIVE + NEGATIVE RELATIVE ACC.)

GRP	SAMPLE	N	MEAN	SD	DIFFERENCE	SIGNIFICANCE
CONTROL		38	-0.132	0.548		
1ST	(vs CON)	31	0.073	0.457	-0.204	.0985
2ND	(vs CON)	30	-0.058	0.564	-0.073	.5918
3RD	(vs CON)	32	0.008	1.009	-0.139	.4723
2ND	(vs 1st)		-0.058	0.564	0.131	.3238
3RD	(vs 1st)		0.008	1.009	0.065	.6853
3RD	(vs 2nd)		0.008	1.009	-0.066	.6868

8. DISTANCE BREAK RANGE (BO + BI DUCTION BREAKS, 6 M)

GRP	SAMPLE	N	MEAN	SD	DIFFERENCE	SIGNIFICANCE
CONTROL		38	-0.868	4.598		
1ST	(vs CON)	31	-0.032	2.702	-0.836	.3782
2ND	(vs CON)	30	-0.667	4.999	-0.202	.6495
3RD	(vs CON)	32	-1.188	3.939	0.319	.6876
2ND	(vs 1st)	30	-0.667	4.999	0.634	.4439
3RD	(vs 1st)	32	-1.188	3.939	1.155	.1778
3RD	(vs 2nd)	32	-1.188	3.939	0.521	.6382

t-tests

9. NEAR BREAK RANGE (BO + BI DUCTION BREAKS, 40 CM)

GRP	SAMPLE	N	MEAN	SD	DIFFERENCE	SIGNIFICANCE
CONTROL		38	-1.447	5.044		
1ST	(vs CON)	31	-0.387	3.252	-1.060	.3168
2ND	(vs CON)	30	-1.033	4.916	-0.414	.6827
3RD	(vs CON)	32	-1.375	7.678	-0.072	.4705
2ND	(vs 1st)		-1.033	4.916	0.646	.5514
3RD	(vs 1st)		-1.375	7.678	0.988	.5177
3RD	(vs 2nd)		-1.375	7.678	0.342	.6706

10. IOP

GRP	SAMPLE	N	MEAN	SD	DIFFERENCE	SIGNIFICANCE
CONTROL		76	-0.092	1.406		
1ST	(vs CON)	62	0.081	1.219	-0.173	.4539
2ND	(vs CON)	60	0.083	1.730	-0.175	.5220
3RD	(vs CON)	64	0.156	1.144	-0.248	.2585
2ND	(vs 1st)		0.083	1.730	-0.003	.3624
3RD	(vs 1st)		0.156	1.144	-0.076	.6777
3RD	(vs 2nd)		0.156	1.144	-0.073	.6884

11. AGE (YRS)

GRP	SAMPLE	N	MEAN	SD	DIFFERENCE	SIGNIFICANCE
CONTROL		38	30.16	5.69		
1ST	(vs CON)	31	25.97	5.05	4.90	.002
2ND	(vs CON)	30	25.00	5.05	5.125	<.001
3RD	(vs CON)	32	26.81	4.62	3.345	.009
2ND	(vs 1st)		25.00	5 05	0.934	.4803
3RD	(vs 1st)		26.81	4.62	-0.845	.4978
3RD	(vs 2nd)		26.81	4.62	-1.779	.1500

12. GRAVIDA

GRP	SAMPLE	N	MEAN	SD	DIFFERENCE	SIGNIFICANCE
CONTROL		38	3.763	2.174		
1ST	(vs CON)	31	2.387	1.230	1.376	.002
2ND	(vs CON)	30	2.567	1.612	1.196	.0137
3RD	(vs CON)	32	3.031	2.132	.732	.1580
2ND	(vs 1st)		2.567	1.612	-0.180	.6209
3RD	(vs 1st)		3.031	2.132	-0.644	.1451
3RD	(vs 2nd)		3.031	2.132	-0.465	.3415

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13. VARIATIONS FROM PLANNED 2ND EXAM DATES

GRP	SAMPLE	N	MEAN	SD	DIFFERENCE	SIGNIFICANCE
CONTROL		38	2.263	6.176		
1ST	(vs CON)	31	1.097	4.989	1.166	.4033
2ND	(vs CON)	30	2.333	5.683	-0.070	.4726
3RD	(vs CON)	32	2.781	4.256	-0.518	.6636
2ND	(vs 1st)		2.333	5.683	-1.237	.3730
3RD	(vs 1st)		2.781	4.256	-1.684	.1505
3RD	(vs 2nd)		2.7818	4.256	-0.448	.6796

END

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